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PROCEEDINGS OF

THE LINNEAN SOCIETY OF LONDON

157th Session (1944–45) Part 3

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1946–47

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SOME SPECIAL PUBLICATIONS.

Synopses of the British Fauna. The first of these Synopses (*No.* 1—*Opiliones*. By Theodore H. Savory, M.A., F.Z.S.) has been issued as a pamphlet, price 1*s.* net.

Catalogue of the Printed Books and Pamphlets in the Library of the Linnean Society of London. New Edition, London, 1925. (Pp. 860.) 10*s.* net.

General Index to the first Twenty Volumes of the Journal (*Zoology*). . . London, 1896. (Pp. 437.) 5*s.* net.

General Index to the first Twenty Volumes of the Journal (*Botany*). . . London, 1888. (Pp. 428.) 5*s.* net.

The Darwin-Wallace Celebration held on Thursday, 1st July, 1908, by The Linnean Society of London. London, 1908. (Pp. 118.) 2*s.* 6*d.* net.

Catalogue of the Manuscripts in the Library of The Linnean Society of London.—Part 1. *The Smith Papers.* (*The Correspondence and Miscellaneous Papers of Sir James Edward Smith, M.D., F.R.S., first President of the Society.*) By Warren R. Dawson, F.R.S.E. London, 1934. (Pp. 114.) 10*s.* net.

—— Part 2. *Caroli Linnaei Determinationes in hortum siccum Joachimi Burseri. The text of the manuscript in the Linnaean Collections,* edited by Spencer Savage, F.L.S. London, 1937. (Pp. 78.) 10*s.* net.

—— Part 3. *Synopsis of the Annotations by Linnaeus and contemporaries in his Library of Printed Books.* By Spencer Savage, F.L.S. London, 1940. (Pp. 20.) 5*s.* net.

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PROCEEDINGS OF

THE LINNEAN SOCIETY OF LONDON

157th Session (1944–5) Part 3

PROCEEDINGS OF THE ANNIVERSARY MEETING
24 May 1945

Mr. A. D. Cotton, O.B.E., President,
in the Chair.

The Proceedings of the General Meeting held on Thursday, 10 May 1945, having been circulated, were taken as read and confirmed.

The following were thanked for gifts made to the Library since the last meeting :—Dr. J. Hutchinson, Miss E. F. Noel, Dr. Malcolm Smith and the East African Agricultural Research Institute, Amani.

The President reported the death of Dr. Stanley W. Kemp, F.R.S., who had been Zoological Secretary of the Society from 1933–36.

Read for the second time certificates of recommendation of the following candidates for Foreign Membership,—in favour of Prof. Vladimir L. Komarov and Dr. Nils Hjalmar Odhner.

The President referred to the presence of Mr. H. N. Ridley, C.M.G., F.R.S., one of the two oldest members of the Society. Mr. Ridley replied.

The following candidates were balloted for and elected Fellows,—F. J. Aumonier, M.Sc., M.R.C.S., L.R.C.P., Eric W. Baxter, B.Sc., Thomas E. T. Bond, Ph.D., Brian L. Burtt, B.Sc., Dr. Lev Cernosvitov, Alfred C. Cramp, Norman F. Ellison, William David Evans, M.Sc., Ph.D., David W Goodall, Ph.D , W. B. Gourlay, M.C., M.A., M.B., B.Ch., R. W. Haines, M.B., D.Sc., Dr. J. G. Hawkes, Mrs. Vera Higgins, M.A., J. D. Macdonald, B.Sc.(For.), B.Sc., Miss Lucy B. Moore, M.Sc., Mrs. Minnie Moore, B.Sc., Mrs. Frances Perry, J. A. Pringle, M.Sc., J. Proskauer, B.Sc., J. W. Purseglove, B.Sc., Leonard T. Raeburn, John Grant Roger, B.Sc., Harold V. Rose, Miss Lorna I. Scott, M.Sc., J. B. Scrivenor, I.S.O., M.A., J. R. Sealy, B.Sc., Miss M. V. Thompson, B.Sc., and Thomas G. Tutin, M.A.

TREASURER'S ACCOUNTS FOR THE

(Presented at the Anniversary

Receipts and Payments of the Linnean Society

General

RECEIPTS	£	s.	d.	£	s.	d.
To Balance at 1 May 1944 :—						
Current Account at Bank	168	6	5			
Deposit Account Post Office Savings Bank	844	12	5			
Cash in hand	4	14	11			
				1017	13	9
,, Admission Fees				52	0	0
,, Arrears of Annual Contributions	173	10	0			
,, Annual Contributions for year	1911	12	4			
Do. in advance	63	10	5			
				2148	12	9
,, Do. of Associates				2	0	0
,, Composition Fees				221	0	0
,, Interest on Investments (including Income Tax recovered)				323	2	4
Do. Post Office Savings Bank Account				95	17	10
,, Sales of Publications :—						
Transactions		10	7			
Journals	48	12	0			
Proceedings	34	10	6			
				83	13	1
,, Grants and donations in aid of Publications				250	0	0
,, Donations for General Purposes				10	10	0
,, Miscellaneous Receipts				5	11	1
,, Income Tax recovered on Pension Fund, to be invested				6	4	0
,, Legacy : H. N. Dixon, F.L.S.				100	0	0
				£4316	4	10

Library

RECEIPTS	£	s.	d.
To Balance 1 May 1944	247	10	1
,, Interest on Investments (including Income Tax recovered)	49	2	8
,, Deposit Account Interest		7	0
	£296	19	9

Fellow's Postal

RECEIPTS	£	s.	d.
To Balance at 1 May 1944	50	15	1
	£50	15	1

YEAR ENDED 30 APRIL 1945

Meeting, 24 May 1945)

from 1 *May* 1944 *to* 30 *April* 1945

Account

PAYMENTS	£	*s.*	*d.*	£	*s.*	*d.*
By Coal, Electric Current, and Gas				45	5	4
„ Repairs : Sundry				41	5	2
„ Taxes and Insurance				53	3	7
„ Miscellaneous Printing and Stationery				153	8	10
„ Petty Expenses and Postages				166	12	7
„ Fire Watching Expenses and A.R.P.				40	19	8
„ Publications :—						
Printing	900	18	1			
Illustrations	159	9	4			
Distribution	48	10	8			
				1108	18	1
„ Salaries, Wages, etc. (including £50 0*s.* 0*d.* presentation to G. Brown)				1036	15	6
„ ' Zoological Record ' Donation (Vols. 79 and 80)				30	0	0
„ Wicken Fen, Local Executive Committee National Trust—Donation				5	0	0
„ Staff Annuities (Annual Premiums)				100	0	0
„ Purchase of £366 9*s.* 7*d.* 2½ per cent. Consolidated Stock (Compounders' Fees and £100 Legacy)				305	0	0
„ Balance at 30 April 1945 :—						
Current Account at Bank	*281	11	10			
Deposit Account Post Office Savings Bank	940	10	3			
Cash in hand	7	14	0			
				1229	16	1
				£4316	4	10

* Including £6 4*s.* 0*d.* to be invested for Pension Fund, and £16 Composition Fee awaiting investment.

Account

PAYMENTS	£	*s.*	*d.*	£	*s.*	*d.*
By Periodicals				45	15	11
„ Binding				26	6	9
„ Books				10	13	0
„ Balance at 30 April 1945 : Current Account	44	4	1			
Deposit Account	70	0	0			
„ Deposit Account Post Office Savings Bank	100	0	0			
				214	4	1
				£296	19	9

Account

PAYMENTS	£	*s.*	*d.*
By Withdrawal during the year		14	2
„ Balance at 30 April 1945	50	0	11
	£50	15	1

Separate Account

Receipts	£	s.	d.	£	s.	d.
To Balance at 1 May 1944 :—						
Westwood Fund	47	19	10			
Trail Award Fund	32	19	2			
Crisp Award Fund	42	6	0			
Hooker Lecture Fund	132	18	8			
Goodenough Fund	5	16	8			
Minchin Fellowship Fund	13	10	5			
Carnegie Corporation Grant	752	17	1			
Reserve Fund	1450	0	0			
				2478	7	10
„ Interest on Investments (including Income Tax recovered) :—						
Westwood Fund	12	6	7			
Trail Award Fund	3	10	0			
Crisp Award Fund	10	4	8			
Hooker Lecture Fund	22	12	0			
Goodenough Fund	10	0	8			
Minchin Fellowship Fund	2	5	0			
Staff Pension Fund	3	10	9			
				64	9	8
				£2542	17	6

Payments	£	s.	d.	£	s.	d.
By Goodenough Fund :—						
Transferred to Annual Contributions				8	10	0
„ Minchin Fund :—						
Transferred to Annual Contributions				8	0	0
„ Staff Pension Fund :—						
Purchase of £3 9s. 10d. 3 per cent. Savings Bonds 1955/65				3	10	9
„ Balance at 30 April 1945 :—						
Westwood Fund	60	6	5			
Trail Award Fund	36	9	2			
Crisp Award Fund	52	10	8			
Hooker Lecture Fund	155	10	8			
Goodenough Fund	7	7	4			
Minchin Fellowship Fund	7	15	5			
Carnegie Corporation Grant	752	17	1			
Reserve Fund	1450	0	0			
				2522	16	9
				£2542	17	6

Investments on 30 April 1945

£	s.	d.	*General Account*		*Market Value 30 April 1945.* £	s.	d.
1000	0	0	3½ per cent. London County Consolidated Stock 1958–68	@107	1070	0	0
1000	0	0	Great Western Railway 4 per cent. Debenture Stock	@117	1170	0	0
312	0	0	London Midland & Scottish Railway 4 per cent. Preference Stock	@ 78½	244	18	5
338	6	8	3½ per cent. War Stock	@103½	351	8	10
1000	0	0	3 per cent. Defence Bonds	@100	1000	0	0
2199	18	6	4 per cent. Australian Stock 1961–64	@111	2441	18	4
200	0	0	3 per cent. War Stock 1955–59	@103	206	0	0
1139	13	0	3 per cent. Savings Bonds 1955–65	@101½	1156	14	11
1914	7	11	2½ per cent. Consolidated Stock	@ 84	1608	1	11
176	19	3	3 per cent. Savings Bonds 1960–70	@100½	177	16	6
					£9426	18	11

£	s.	d.	*Library Account*		£	s.	d.
450	0	0	Forth Bridge Railway 4 per cent. Stock (Bentham Bequest)	@105	472	10	0
103	12	5	Surrey County 3 per cent. Stock 1961–66 (Wakehurst Bequest)	@101	104	13	1
191	12	7	4 per cent. Australian Stock 1961–64 (Walker & Morey Bequests)	@111	212	14	2
107	2	1	2½ per cent. Consolidated Stock (Stebbing Bequest)	@ 84	89	19	4
530	0	0	3 per cent. Savings Bonds 1960–70 (Tagart Bequest)	@100½	532	13	0
					£1412	9	7

£	s.	d.		*Separate Account*		£	s.	d.
£1063 10 7	232	5	0	Metropolitan Water Board 3 per cent. " B " Stock (Westwood Bequest)	@ 99	229	18	7
	667	14	2	Ditto ditto (Hooker Lecture Fund)	@ 99	661	0	8
	163	11	5	Ditto ditto (Goodenough Fund)	@ 99	161	18	8
	100	0	0	New South Wales 3½ per cent. Stock, 1930–50 (Trail Award Fund)	@103	103	0	0
	409	11	1	2½ per cent. Consolidated Stock (Crisp Award Fund)	@ 84	344	5	1
£380 10 6	156	7	2	,, ,, ,, (Westwood Fund)	@ 84	131	6	8
	74	14	6	,, ,, ,, (Hooker Lecture Fund)	@ 84	62	15	5
	149	8	10	,, ,, ,, (Goodenough Fund)	@ 84	125	10	7
	238	9	7	3 per cent Savings Bonds 1955–65 (Staff Pension Fuid)	@101½	242	1	2
	100	0	0	,, ,, ,, 1960–70 (Minchin Fund)	@100½	100	10	0
				F. C. STERN, *Treasurer.*		£2162	6	10

We have (in conjunction with the Professional Auditors, who certify as to all details) audited the Accounts of the Society for the year ended 30 April 1945 and found them correct. We have verified the Investments and Bank Balances.

Dated this 18 May 1945.

W. B. KEEN & Co., *Chartered Accountants*,
224 Regent Street, London, W. 1.

I. HENRY BURKILL, V.-P.,
A. A. PEARSON,
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J. HUTCHINSON,
R. WINCKWORTH,
B. BARNES,
} *Audit Committee.*

The Bye-Laws regulating the Election of Council and Officers having been read by the Assistant Secretary, the PRESIDENT declared the Ballot for the new Members of Council to be open, and voting began. The PRESIDENT thereafter appointed Lt.-Col. W. P. C. Tenison, D.S.O., Dr. J. Ramsbottom, O.B.E., and Dr. J. Hutchinson as Scrutineers of the Ballots.

The Ballot was closed at the due time, and the result declared to the Meeting,—NEW MEMBERS OF COUNCIL.—Mr. A. H. G. Alston, Prof. T. A. Bennet-Clark, Dr. F. C. Fraser, Dr. H. S. Holden and Dr. S. M. Manton.

(The retiring Councillors were Mr. I. H. Burkill, Mr. J. E. Dandy, Mr. D. M. Reid, Dr. P. W. Richards and Prof. D. L. Mackinnon.)

The PRESIDENT declared the Ballot for Officers to be open and voting began. The Ballot was closed at the due time, and the result declared to the Meeting,—OFFICERS.—*President*: Mr. A. D. COTTON, O.B.E.; *Treasurer*: Colonel F. C. Stern, O.B.E., M.C.; *Botanical Secretary*: Dr. B. Barnes; *Zoological Secretary*: Dr. Malcolm A. Smith.

Owing to the Treasurer's absence through illness, his Financial Report was read by the Deputy Treasurer and the Accounts of the Society, duly audited, for the year 1944–45 were laid before the meeting.

On a motion by Mr. A. A. PEARSON, seconded by Sir GEOFFREY EVANS, C.I.E., the Report and Statement of Accounts were adopted.

The Librarian and Assistant Secretary presented his Report.

LIBRARIAN AND ASSISTANT SECRETARY'S REPORT.

List of the Society.—Since the last Anniversary Meeting the Society has lost 31 members. The detailed statement is as follows :—

21 *Fellows by death*: Lt.-Col. Frederick Robert Stephen Balfour, C.V.O., William Holmes Burrell, Rev. John Fernand Caius, S.J., Hugh Neville Dixon, Lt.-Col. Andrew Thomas Gage, C.I.E., Col. Masters John Godfery, Dr. Stanley W. Kemp, Bertram Lloyd, A. C. Willoughby Lowe, John Melvin Lowson, Rev. Prof. Edward Shefford Lyttel, Prof. Frère Marie-Victorin, Rev. Canon Henry Kingsmill Moore, D.D., William Edward Nicholson, John Roxbrough Norman, Alfred William Oke, Dr. W. Rushton Parker, Prof. Joseph Hubert Priestley, D.S.O., Dr. Douglas Stewart Raitt, Dr. Ethel N. Thomas and Sir Arthur Smith Woodward.

2 *Foreign Members by death*: Prof. Gustav Gilson, Prof. Eugène L. Bouvier.

2 *Associates by death*: Thomas Alfred Dymes, Thomas Sheppard .

4 *Fellows by withdrawal*: Benjamin Bunting, the Rt. Rev. the Bishop of Gloucester, Tom Russell Goddard, Haslehurst Greaves.

2 *Fellows* by removal from the list: Prof. T. S. Raghavan, William R. C. Paul.

During the Session 21 Fellows have been elected; all have qualified. 2 Foreign Members and 3 Associates *honoris causa* have been elected The present number on the List of Fellows is 608.

Library.—Between 1 May 1944 and 30 April 1945 21 books, 158 parts of periodical publications and 55 reprints have been presented. During the same period the number of volumes bound was 54. The number of volumes borrowed by Fellows and Associates was 602 and by the National Central Library 200. 289 signatures were recorded in the Library Visitors' book.

At the last General Meeting he attended, the late Colonel F. R. S. Balfour made a valuable addition to the Society's collection of MSS. by his donation of a finely bound transcription, in 5 vols. quarto, of the Journal kept by Archibald Menzies (1754–1842) during his voyages.

Linnaean Collections.—During the past year the printing of the Catalogue of the Linnaean Herbarium has been proceeding, and at the present time the greater part of it is in type.

The President's Review.

The President then delivered his Address, including an exhibition of lantern-slides illustrating the Tree Senecios, as follows,—

The Anniversary Meeting this year falls only a few days after the great event which we have all been celebrating with relief and thankfulness—the cessation of hostilities in Europe. Although during the last three years the Linnean Society has been able to hold meetings, and indeed successful meetings, it has always been with the consciousness of the shadow which has overhung the continent of Europe and with the consciousness, too, of being cut off from intercourse with so many colleagues. With the coming of peace in Europe international co-operation once more dawns on the horizon.

During the session the usual number of meetings, in accordance with the war-time programme, have been held. The policy has been to provide papers on a variety of subjects, rather than to have a series of communications on selected subjects. Judging by the attendance, the interest shown, and the willingness of both Fellows and visitors to discuss the papers, this procedure appears to have been appreciated. The discussions have been both lively and profitable. A noteworthy meeting was that held on 23 November, most of it being devoted to the commemoration of the bicentenary of the great French naturalist Lamarck. The arranging of properly balanced programmes, which are to occupy exactly two hours, is not always easy. The responsibility has, as usual, been left almost entirely in the hands of the Zoological and Botanical Secretaries, Dr. Malcolm Smith and Dr. Barnes. Both are exceedingly occupied with other duties, and the thanks of the Society are due to them for giving us so unstintingly of their time and for providing meetings which have proved so successful.

We have again enjoyed holding joint meetings with the Zoological Society of London. Many Fellows have remarked on the added interest and stimulus which the extra zoological papers have brought to the

programme. The pleasure which we experience in knowing that the Zoological Society will again shortly be able to meet in their own rooms is tinged with regret at our own loss.

It is gratifying to us all to know that Col. F. C. Stern has been able to resume his duties as Treasurer and to feel that the affairs of the Society are in such expert hands. The office of Deputy Treasurer, so ably held by Dr. Barnes in Col. Stern's absence, has therefore lapsed. I know that the meeting will welcome this opportunity to express thanks to Dr. Barnes for filling the gap whilst continuing at the same time to serve the Society as Botanical Secretary.

You will have noted that the Treasurer reports that the Society must be prepared to face considerable expense in the near future in order to restore the inside of the building to its normal condition. The return of the collections and the books which were evacuated, the renovation of the interior of the building, and the supplying of new bookshelves will involve time as well as expense. During the winter the Society has suffered from shortage of fuel and some inconvenience has been caused to Fellows using the rooms. The Treasurer is of opinion that the old-fashioned heating system should be removed and he is making enquiries personally as to the practicability of installing a more modern method. Fellows will agree with him that our beautiful rooms should be comfortable and that the facilities given should be as good as possible.

The Society has received the following donations during the year which, in view of increasing expenditure, are particularly welcome :—

Rockefeller Foundation (for publications) - - -	£150	0	0
Parliamentary Grant distributed by the Royal Society (for publications) - - - - - -	50	0	0
Gonville and Caius College : Donation towards cost of Dr. V. J. Chapman's paper - - - -	50	0	0
H. N. Dixon, Legacy (general purposes) - - -	100	0	0
Imperial Chemical Industries (annual donation for general purposes) - - - - - -	10	10	0

From the Secretary's report you will have heard that we have now 608 Fellows on the list. We regret to record the loss of 31 members of the Society during the past year, including 23 ordinary Fellows. Twenty-one new Fellows have been elected, so our Fellowship is two less than last year. The Deputy Treasurer's remark in 1944 that 'the Society greatly needs a good addition of suitably qualified new Fellows' therefore still holds good. Seven of the new Fellows recently elected have been admitted and the old formula framed by our first Treasurer, Bishop Goodenough, in 1791, 'By the authority and in the name of the Linnean Society of London, I admit you a Fellow thereof,' has been pronounced seven times. It is interesting to recall that the original wording of this formula of welcome was, 'I admit you a fellow-member.'

As I mentioned a year ago, it has been a pleasure for the Society to place its rooms at the disposal of other biological societies for their meetings. These included :—

The Association for the Study of Systematics,
The British Mycological Society,
The S.E. Union of Scientific Societies,
The British Ecological Society,
The Society for the Promotion of Nature Reserves,
The Genetical Society,
The Botanical Society and Exchange Club,
The British Association Committees,
The Malacological Society.
The Society for Experimental Biology, and
The Association of Applied Biologists.

In following this practice a certain amount of wear and tear of furniture is involved and there is the use of additional electric current, but in spite of this, apart from a gratuity for the housekeeper, no charge is made. The procedure reflects a definite policy on the part of the Linnean Society, which is being increasingly pursued by the Council, namely, that as the senior Biological Society in the country the Linnean should endeavour to promote the welfare of other biological societies in every way that is practicable.

Last year reference was made to the commencement of a series of publications entitled ' Synopses ' which deal with various groups of the British fauna and flora. During the past twelve months one further number has appeared, namely, that dealing with the Gammaridae, by Mr. D. M. Reid. Two further numbers on the Hover-flies, by Mr. E. Rivenhall Goffe, and on the Millipedes and Centipedes, by the Rev. Dr. S. Graham Brade-Birks, will, it is hoped, be published before the end of the year. Another two Synopses are expected to be ready a little later and work is in hand on several others that have been promised. Any Fellow desirous of undertaking the publication of further Synopses or collaborating in systematic work of this nature, on either an animal or a plant group, should communicate with the Editor, Mr. D. M. Reid.

The Algal Committee has met once. In view of the lack of details available as to the factors influencing growth-form and distribution in marine algae, the Committee has drawn up a scheme to guide observation in the acquisition of more precise ecological data. It is proposed to circulate the details of the scheme amongst algologists throughout the British Isles and it is hoped that the material collected may serve as a basis for a biological flora of the British Marine Algae.

The Library Committee has met regularly during the past year and has recommended the purchase of a number of new books. At my request the Chairman of the Library Committee, Mr. C. C. Hentschel, attended a meeting at the Royal Society to discuss various questions which had arisen concerning the libraries of the learned societies. One of the principal items was to consider the possibility of the pooling of

certain periodicals into a central common library. There exist a number of journals, chiefly those published by Academies of Science, which contain papers on all branches of science. At present it is necessary for the libraries of each learned society to acquire the Transactions and Proceedings of these academies, though each society feels that the volumes often contain for them little or nothing of interest. If the scheme of a common library for periodicals of such a mixed nature were adopted much precious shelf-space would be saved by the individual societies as well as considerable expense in the purchase and binding of books. The Journals concerned would be available for consultation and for borrowing by Fellows of the various societies taking part in the scheme, just as they are at present. There might in some instances need to be more than one set available in the central library. Any volumes transferred from a society's shelves to the pool library would remain the property of that particular society.

No decision was arrived at nor was the position of the central library defined, but it was the intention of the Royal Society that if formed it should be in proximity to the rooms of the societies around Burlington House. Whether space for it could be found within the precincts of Burlington House or in a new underground site in the quadrangle is not known.

The Chairman of the Library Committee reported these findings to his Committee and later to the Council. If the new scheme materializes it will ease to some extent the acute shortage of shelf-space from which the Linnean Society's Library is now suffering. In view of these discussions, which are being continued, and of other questions raised by the Royal Society to which reference will be made later, the Library Committee is for the present holding its hand on the work of the reorganization of the Library.

The photographing of the Linnaean Collections on microfilm has enabled the Assistant Secretary to compile a detailed catalogue of the Linnaean Herbarium, which the Society hopes to publish during this summer. In this catalogue, of about 15,000 sheets constituting Linnaeus's Herbarium, every essential inscription is either included in full or indicated; the handwritings have been carefully studied so that the inscriptions can be correctly attributed to their writers. The notes include numerous references to lists among the Linnaean MSS., which enable many specimens to be dated for the first time. During the past three years the whole of the work involved in producing this catalogue has been carried out by the Assistant Secretary at his home and, apart from the preparation of the manuscript and the reading of proofs, has included examination, several times over, of each of the microfilms of the 15,000 sheets.

When one considers the accuracy required in order to interpret each film, to collate them and from the whole to produce a catalogue accompanied by text, one is amazed at the amount of industry and concentrated effort put into the task. Our indebtedness to Mr. Savage for his constant labours on behalf of the Society is appreciated by all.

He has already compiled—also very largely in his own time—the catalogue of the Library. This fresh evidence of his devotion to the Society in the provision of an annotated catalogue of the Linnaean Herbarium, which will be consulted with eagerness by taxonomic botanists in every country of the world, earns for him our very special gratitude.

At the present time the greater part of the catalogue is in print, and when completed will form a book of about 250 pages with nine plates. The work has been carried out with the approval of the Council, on a recommendation made by the Committee for the photographing of the Linnaean Collections.

With the prospect in the near future of the return to our rooms of the Linnaean Collections and the other collections of specimens, manuscripts and books which have been in safe keeping during the war, I would like to voice the thanks of the Fellows to all those who have so generously taken care of the Society's treasures; especially to the British Museum (Natural History) for storing the Linnaean Collections in their quarters at the Tring Museum since 1941; to the Bodleian Library for its care of some 3,000 important volumes from the Society's general library; and to Mr. Warren R. Dawson, F.S.A., who has taken charge of the Society's archives and miscellaneous manuscripts at his country house in Buckinghamshire. Since March 1944 the Roll and Charter Book has been in the custody of Dr. and Mrs. T. A. Sprague at their temporary residence in Gloucestershire, and from about the same date over 3,000 volumes have been stored in one of the underground air-raid shelters built for the staff of the Royal Botanic Gardens, Kew.

I now have to refer to an important matter which concerns to an even greater degree the future and well-being of the Society, namely, the question of accommodation.

The rooms belonging to the societies which share Burlington House were, as most Fellows are aware, provided for them by the Government about the year 1873 and the maintenance of all these buildings is undertaken by the Ministry of Works. This was a notable contribution to science by the Government for which the Prince Consort was largely responsible, for he, as Sir Henry Dale pointed out in his presidential address to the Royal Society on 30 November 1943, repeatedly urged the claims of scientific societies and 'had a vision of the future meaning of science far in advance of his time.'

Early last year Sir Henry invited the Presidents of those societies which had accommodation in Burlington House to meet him in order to discuss the questions raised in his Presidential Address. That address dealt with the need of increased accommodation which was felt by the societies in question and very acutely by the Chemical Society and the Royal Society.

The meeting was held on 26 May 1944. Mr. Burkill, Dr. Malcolm Smith and the Assistant Secretary attended the meeting with me.

In a memorandum prepared for this meeting three alternative policies were outlined :—

(1) The acquisition of additional accommodation without removal from the Burlington House site.

(2) The removal of one or more of the societies from Burlington House in order to allow of the expansion of those which remain.

(3) The construction of new buildings on a new site which should include not only the societies which already had accommodation in Burlington House, but also the affiliated scientific societies at present housed elsewhere.

After full discussion it was decided that a deputation from the societies of Burlington House, headed by the Royal Society, should approach the Government, pointing out the urgent need for additional accommodation and the importance of ensuring that science and scientific bodies were adequately represented in the capital of the Empire.

The deputation to wait on H.M. Ministers took place at 11, Downing Street, on 13 October 1944. At the wish of the officers I represented the Society. The case was presented by Sir Henry Dale and he was supported by other speakers. The deputation was very sympathetically received.

In reply, Mr. Attlee said that the matter would be carefully considered by H.M. Government. He expressed a wish to know how much ground and what accommodation would be required to carry out the third scheme, namely, that of an entire suite of buildings. Sir Henry agreed to look into this matter and submit a statement.

It is hardly necessary to add that the Fellows will be fully informed before any decision is taken which will affect the Linnean Society.

I now propose to show some lantern-slides relating to the subject we considered last year, namely, the megaphytic habit of the Tree Senecios.

The Presidential Address often includes a scientific discourse. If such a discourse is to contain new matter and be of general interest its preparation may become a severe strain if repeated for each of the three years of office, especially to Presidents whose time for research is extremely limited. There is no bye-law governing the matter, and it occurred to me that this evening an exhibition of slides illustrating last year's address and leading up to further studies would meet with the approval of the meeting.

On the conclusion of the Address, Dr. J. Ramsbottom, O.B.E., moved 'That the President be thanked for his excellent address, and that he be requested to allow it to be printed and circulated amongst the Fellows'. The motion was seconded by Mr. I. H. Burkill, and being put to the meeting was carried with acclamation.

The President announced his appointment of Vice-Presidents for 1945–46,—Colonel F. C. Stern, O.B.E., M.C., Dr. H. S. Holden, Lt.-Col. R. B. Seymour Sewell, C.I.E., F.R.S., and Mr. R. Winckworth.

PROCEEDINGS OF THE GENERAL MEETING ON 7 June 1945

held jointly with The Zoological Society of London.

Colonel F. C. Stern, O.B.E., M.C., Vice-President, in the Chair.

The Proceedings of the Anniversary Meeting held on Thursday, 24 May 1945, having been circulated, were taken as read and confirmed.

The following Loyal Address to His Majesty The King was read,—

To the King's most Excellent Majesty, PATRON OF THE LINNEAN SOCIETY OF LONDON

The humble address of its President, Council, Fellows and Associates

May it please Your Majesty

WE, your dutiful and loyal subjects, the President, Council, Fellows and Associates of The Linnean Society of London, humbly beg leave to offer our heartiest congratulations on the victorious end of the war in Europe and to express our hope that when the allies have brought the war against Japan to a successful conclusion the world may enjoy a lasting peace.

It is our earnest wish that Your most Gracious Majesty, with Her Majesty the Queen, may long continue to reign over Your devoted and loyal subjects.

Given under the Common Seal of the Society this seventh day of June in the year 1945.

A. D. Cotton, *President.*
F. C. Stern, *Treasurer.*
L. S. Malcolm A. Smith, B. Barnes, } *Secretaries.*

The following were thanked for gifts made to the Library since the last meeting :—Mr. F. D. Armitage, Prof. A. J. E. Cave, Mr. M. R. Henderson, Dr. E. A. Nobbs and the Royal Horticultural Society.

The following Fellows signed the Obligation in the Roll and Charter Book, and were admitted Fellows :—Capt. Brian Laurence Burtt, Mrs. Vera Higgins, Johannes Proskauer, John Brooke Scrivenor, I.S.O., Dr. David William Goodall, Dr. Frederick William Andrews, Alfred C. Cramp, J. D. Macdonald and Joseph R. Sealy.

Read for the first time certificates of recommendation of the following candidates for ordinary Associateship :—Jo Bossanyi and Owen L. Wade, M.B., M.R.C.S.

The following candidates were balloted for and elected Foreign Members,—Prof. Vladimir L. Komarov and Dr. Nils Hjalmar Odhner.

The following communications were read and discussed :—

Dr. C. Leighton Hare. Some features of the structure and life-history of *Eriocaulon septangulare* With. and their bearing on its geographical distribution. (Discussed by Mr. A. J. Wilmott, Dr. R. Melville and Dr. C. R. Metcalfe.)

Abstract.—

The present paper, illustrated by lantern-slides and drawings, presents a brief summary of certain aspects of an investigation into the structure and development, biology and ecology of *Eriocaulon septangulare* With., which the writer began in Ireland in the summer of 1934 and continued during the following five years in Scotland. Most of the field observations were made in Skye, while the laboratory work was carried out at Aberdeen and since the war on a smaller scale at Kew. During this period a large number of both Scottish and Irish specimens of the plant have also been kept under observation in culture and out of doors.

The main purpose of this investigation was to throw further light on the peculiarities in the geographical distribution of this species, which is a prominent member of the small North American element in the British flora. While many of the results obtained have an intrinsic interest only their bearing on the control problem will be dealt with on the present occasion.

Discussion.—

Mr. A. J. Wilmott said that he had seen *Eriocaulon septangulare* growing on moss on the surface of the water, not submerged : he had photographed it thus near Sligachan in Skye. He did not think the species in the list given of the American element in the British flora could be treated as a single group. The southern Irish *Spiranthes gemmipara* was very like some dried specimens he had seen in the Gray Herbarium, and they all came from those parts of the St. Lawrence area which Prof. Fernald considered to have remained unglaciated during the glacial period. But the northern Irish plant, which was the common plant known across North America as *S. Romanzoffiana*, occurred by Lough Neagh very conspicuously in short grass which must have been crossed by all the botanists visiting the islet on which grew *Carex Buxbaumii*, and he could not think that they had all overlooked it : there is no reason to suppose that it, like the southern plant, is probably a pre-glacial relic. *Juncus macer* grows by roadsides and on waste ground, and though known for a long time in Ireland, does not grow in obviously natural associations. *Juncus Dudleyi*, confined to a single small area, where it grows with *J. macer*, is a problem : could it possibly have been brought from America somehow during the last war ? *Sisyrinchium angustifolium* is not confined to Ireland : records from England and Scotland continue to come in, always about a few odd plants. It is easily overlooked, but seems to be actually slowly spreading. In Ireland some of its habitats

seem very wild, but until its means of spreading are known its nativity must be in doubt. The *Naias* might be native ; he knew no evidence.

He was interested that Dr. Leighton Hare thought that the *Eriocaulon* was a pre-glacial relic. He thought that the great difference between the S. American and African floras, as compared with the considerable genera and even species in common between North America and Europe, indicated a comparatively late separation in the north, and that this was confirmed by the Greenland flora, which in East Greenland was European in composition but in West Greenland more American, indicating, perhaps, that the separation between Europe and Greenland occurred since the beginning of the Greenland ice-cap.

Dr. R. Melville said that he agreed with Mr. Wilmott in believing that the distribution of *Eriocaulon* and other plants forming the American element in our flora could best be accounted for by the theory of continental drift. There was geological evidence indicating that South America separated from Africa at an earlier date than North America from Europe, probably in the permian. The rift between Europe and America did not take place until the Alpine revolution, which marked the end of the cretaceous and beginning of the tertiary period. This would account for the plant distributions mentioned by Mr. Wilmott.

Among other possibilities mentioned by Dr. Hare was dispersal by birds. It was worth while recalling that certain American species of duck migrated to Iceland for breeding. Occasionally a few of these birds went astray on their r turn journey and landed in the British Isles or other parts of Western Europe. The chance of *Eriocaulon* being distributed by this route would seem to be remote.

Dr. C. R. Metcalfe said that the time available was inadequate to discuss any of the interesting problems arising out of Dr. Hare's paper. He expressed pleasure at having been able to provide facilities at the Jodrell Laboratory at Kew for Dr. Hare to conclude his observations on *Eriocaulon*, and paid tribute to the excellent quality of the drawings and photographs with which the lecture had been illustrated.

Dr. A. T. Hopwood. Contributions to the study of some African mammals.—III. Adaptations in the skeleton of the fore-limb of lion, leopard and cheetah. (Discussed by Prof. A. J. E. Cave, Major S. S. Flower, O.B.E., and Dr. J. P. Harding.)

Abstract.—

The differences in habit between the three large cats of the African fauna are reflected in the morphology of the bones of the fore-limb, and in the origins and insertions of the muscles. The resemblances and differences between the carpus and metacarpus of the Carnivora and the primitive Artiodactyla are also discussed. [This paper will be published in full in the Journal, Zoology.]

Dr. E. W. Gudger, C.M.Z.S. The giant Freshwater Fishes of Europe. (The paper was given by Dr. Edward Hindle, F.R.S.) (Discussed by Major S. S. Flower, O.B.E., Dr. V. V. Tchernavin and Lt.-Col. W. P. C. Tenison, D.S.O.)

Abstract.—

The communication deals with the Wels, *Siluris glanis*, the giant Catfish of the Danube, etc., and the Giant Beluga Sturgeon, *Huso huso*, of the Volga river and the Caspian Sea. The latter reaches a length of more than fourteen feet, and weights of at least a ton and a half. This Sturgeon is the largest-known freshwater fish.

[This paper will be published by the Zoological Society.]

The following papers were read in title :—

'The seasons in a tropical rain-forest (New Hebrides).—Part 6. Lizards (*Emoia*). Part 7. Summary and general conclusions'. By John R. Baker, M.A., D.Sc. [These papers will be published in the Journal, Zoology.]

PROCEEDINGS OF THE GENERAL MEETING
21 June 1945

Mr. A. D. Cotton, O.B.E., President,
in the Chair.

The Proceedings of the General Meeting held on Thursday, 7 June 1945, having been circulated, were taken as read and confirmed.

The following reply to the Loyal Address to His Majesty The King was read

Buckingham Palace,
10 *June* 1945.

Dear Sir,

I am commanded by The King to express to you His Majesty's sincere thanks for the kind and loyal message which you have sent to His Majesty on behalf of yourself and your fellow-members of the Linnean Society of London on this great and memorable occasion of Victory in Europe.

Yours sincerely,
[*signed*] A. LASCELLES.

A. D. Cotton, Esq., O.B.E.,
President, Linnean Society of London,
Burlington House, Piccadilly, W. 1.

The following was thanked for a gift made to the Library since the last meeting :—Capt. F. Kingdon Ward.

The following Fellows signed the Obligation in the Roll and Charter Book, and were admitted Fellows :—Sir Murdoch McLeod, Bt., Mrs. Frances Perry, Dr. William Balfour Gourlay, M.C., Dr. Richard Wheeler Haines and Miss Lorna Iris Scott.

The following candidates were balloted for and elected ordinary Associates :—Jo Bossanyi and Owen L. Wade, M.B., M.R.C.S.

The President reported the deaths of Miss Edith Rebecca Saunders and Mr. Walter Eric James, Fellows of the Society.

The following communications were read and discussed,—

Mr. A. J. Wilmott. Exhibit of lantern-slide showing *Eriocaulon* growing on the surface. (Discussed by Colonel F. C. Stern, O.B.E., M.C., and Dr. C. Leighton Hare.)

Major Albert Pam, O.B.E. The Snake-Venom Serum Institute in San Paulo, Brazil. (Discussed by Dr. Malcolm Smith, Dr. L. Richmond Wheeler and Lt.-Col. R. B. Seymour Sewell, C.I.S., F.R.S.; Major Pam replied.)

Abstract.—

An account of the Institute, how it obtains snakes and how they are kept, the method of extracting the venom and the distribution of the serum; with some general observations on the use of the serums, and of the extraction of the poison fangs of Tarantula Spiders, for the preparation of a special serum.

Mr. G. H. Locket. The Availability of Water to Plants in Chalk.

Abstract,—

During the investigation of the colonization of an area of bare chalk, an attempt was made to obtain some idea of the availability to plants of the water in chalk and in soils of high chalk content. The water-content remains very steady over dry periods, although plants may suffer from drought, so that measurement of water-content alone is of little value. Samples of solid and pulverized chalk were submitted to known suction pressures in the laboratory and their water-contents measured, whence it was found that little or no water was lost from the solid up to a suction pressure of 1 atm. This would account, at least in part, for the steady values obtained in the field over dry periods, and for the fact that plants appear unable to draw on the large reserve of water. Further experiments show that for some plants found on chalk, a pressure of about 500 cms. of water produces conditions similar to a drought in the field. Between a suction of 1 atm. and that at the accepted 'wilting point' (15,800 cms. of water) a large proportion of water is lost from chalk, but plants cannot draw on this to an extent that enables them to flourish, although it may enable them to keep alive in time of drought. By direct measurement of suction in the field, 3½ ft. below the surface, during 1943 and 1944, it was found that drought conditions existed at this depth from August to October.

Mr. W. B. Dowson. The habits of some fishes of Nigeria. (Read by Dr. E. Trewavas in the author's absence. Discussed by Dr. Trewavas, Major S. S. Flower, O.B.E., and Dr. Malcolm Smith.)

Abstract,—

Preliminary observations on two species of *Tilapia* and species of Grey Mullet (Mugil) in a brackish creek opening into Lagos Harbour.

The following paper was read in title,—

'Contributions towards the Fungus Flora of Uganda.—Part VIII. New Records (continued)'. By C. G. Hansford, M.A., F.L.S [Printed in full below.]

CONTRIBUTIONS TOWARDS THE FUNGUS FLORA OF UGANDA.—VIII. NEW RECORDS (*continued*).

By C. G. Hansford, M.A., F.L.S., Senior Plant Pathologist, Department of Agriculture, Uganda.

(With 11 Text-figures.)

The present paper, continued from No. VII. of this series, deals with recent collections of Uganda Fungi, chiefly on leaves of various plants, together with a considerable number of allied fungi from other parts of the world, recently examined by the author.

Microcyclus uvariae Hansf. J Linn.

123. **Dothidella Uvariae** Hansford, sp. nov.

Stromata epiphylla atra pulvinata rugosa, usque ad 2 mm. diam., 0·4–0·5 mm. alt., dura, glabra, inferne in hypostromate centrali contracta. *Loculi* 2–10, globosi, immersi, usque ad 400 μ dia.; paries 40–50 μ cr., ex cellulis angulosis subopacis atro-brunneis 5–8 μ diam. compositus, apice poro centrali pertusus. *Asci* basales erecti cylindraceo clavati, breviter stipitati, superne rotundati incrassati (–4 μ), usque ad 120 μ long. et 15–19 μ cr., 8-spori. *Sporae* oblique 2-seriatae, hyalinae, clavulatae, fusoideae, leves, utrinque obtusae, 1-septatae, lenissime constrictae, 25–29 × 5·5–7 μ; cellula inferiore leniter longiore et attenuata.

Hab. in foliis *Uvariae bukobensis*, Kazi, Kampala, Uganda, *Hansford 3072.*

The stromata are usually epiphyllous, black, pulvinate, rugose, up to 2 mm. diam. and 0·4–0·5 mm. high above the leaf surface, hard, shining, glabrous, centrally attached by a foot about 100–160 μ diam. to the hypostroma in the mesophyll of the host. The hypostroma reaches the lower epidermis and consists of almost a solid mass of pale brown pseudoparenchyma of shortly septate dense hyphae; at first the hyphae are intercellular in the mesophyll, but later by crushing and penetrating the dead host cells, the solid hypostroma is formed and sharply demarcated by darker hyphae around its edge, the mature hypostroma being about 300 μ diam. The basal part of the ectostroma and the tissue between the loculi consists of dark brown parenchyma, the cells being 5–8 μ diam., or in the region of the foot somewhat longitudinally elongated. The loculi cover most of the ectostroma, but are sometimes arranged in a ring around a sterile centre; from the outside they show as rounded lobes of the stroma, each with central papilla and pore. Loculi 2–10 in each stroma, globose, immersed and separated by walls 40–50 μ thick, each lined by one or two layers of small hyaline parenchyma. The asci are basal and arise from a delicate hyaline parenchyma at the base of the loculus, erect cylindric-clavate, shortly stipitate, broadly rounded and

thickened up to 4 μ at the apex, 8-spored, aparaphysate, up to 120 × 15–19 μ. Spores obliquely 2-seriate, hyaline, clavulate-fusoid, smooth, usually straight with obtusely rounded ends, 1-septate, slightly constricted, 25–29 × 5·5–7 μ; the lower cell slightly longer than the upper and slightly attenuate to the rounded base.

124. **Systremma Canthii** Hansford, sp. nov.

Maculae nullae. *Mycelium* primo subcuticulare, demum hypostroma atrum cellularum prosenchymaticarum in epidermide et subepidermide efformans; hypostroma erumpens et ectostroma efformans. *Stromata* praecipue hypophylla dispersa atra pulvinata rugosa levia 300–500 μ diam., usque ad 300 μ alt. *Loculi* 4–12, circa 100 μ alt. et 60 μ diam.; paries circa 30 μ cr. et poro spicali 20 μ diam. pertusus. *Asci* aparaphysati basales clavato-ellipsoidei subsessiles 8-spori, usque ad 70 × 30 μ, antice rotundati. *Sporae* 2–3-seriatae, cylindraceae utrinque rotundatae, 1-septatae haud constrictae, leves, 25–30 × 5 μ, in asco hyalinae, liberae olivascentes.

Hab. in foliis *Canthii vulgaris*, Kazi, Kampala, *Hansford 2868*.

The mycelium is at first subcuticular, later forming a dark hypostroma in and below the epidermis, consisting of dark thick-walled angular cells with short cylindric hyaline hyphae penetrating down between the palisade cells and often reaching lower layers of the mesophyll. Finally the whole internal mycelium turns brown and discolours the whole of the tissue of the leaf on the side affected, but not usually visible on the opposite side. The hypostroma enlarges and raises the cuticle, finally breaking through and forming the black ectostroma, which may contain from 4 to 12 loculi arranged in a single layer and occupying the whole of the upper part of the stroma, which reaches 300–500 μ diam. and up to 300 μ high above the leaf surface. The ectostroma is thick pulvinate, black rugose shining, and consists of dark parenchyma 5–10 μ diam. The loculi are ellipsoid, about 100 μ long by 60 μ diam., each lined with one or two layers of delicate hyaline flattened parenchyma; between and around the loculi the stroma tissue is about 30 μ thick, with a terminal pore about 20 μ diam. The asci are basal, aparaphysate, developing from a hyaline basal parenchyma in the loculus, clavate-ellipsoid, subsessile, 8-spored, up to 70 × 30 μ, rounded and very slightly thickened at the apex. Spores 8, 3-seriate or irregularly parallel in the ascus, cylindric with rounded ends, 1-septate, the cells equal, not constricted, smooth, 25–30 × 5 μ, remaining hyaline in the ascus but becoming pale olivaceous after discharge.

The later specimen *Hansford 3228* shows the conidial stage: Conidial stroma exactly as the perithecial, the conidia being formed on short simple hyaline conidiophores forming a layer over most of the interior of the loculi; conidia hyaline, bent fusoid with acute ends, continuous with finely granular contents, smooth, 30–37 × 1·5–2 μ, becoming pale olivaceous after discharge from the terminal pore of the loculus.

125. **Phragmodothella Symphoniae** Hansford, sp. nov.

Stromata perithecioidea unilocularia, dispersa rarius 2–3-connata, atra dura, levia vel asperula, irregulariter dehiscentia, epiphylla, dense

in maculis atris usque ad 10 mm. diam. aggregata ; stromata singula usque ad 250 μ diam. et alt. *Paries* multistratosus, usque ad 50 μ cr., parenchymaticus, haud radiatus. *Loculi* circa 100 μ diam. *Asci* numerosi basales, aparaphysati, clavulati vel ellipsoidei, antice rotundati,

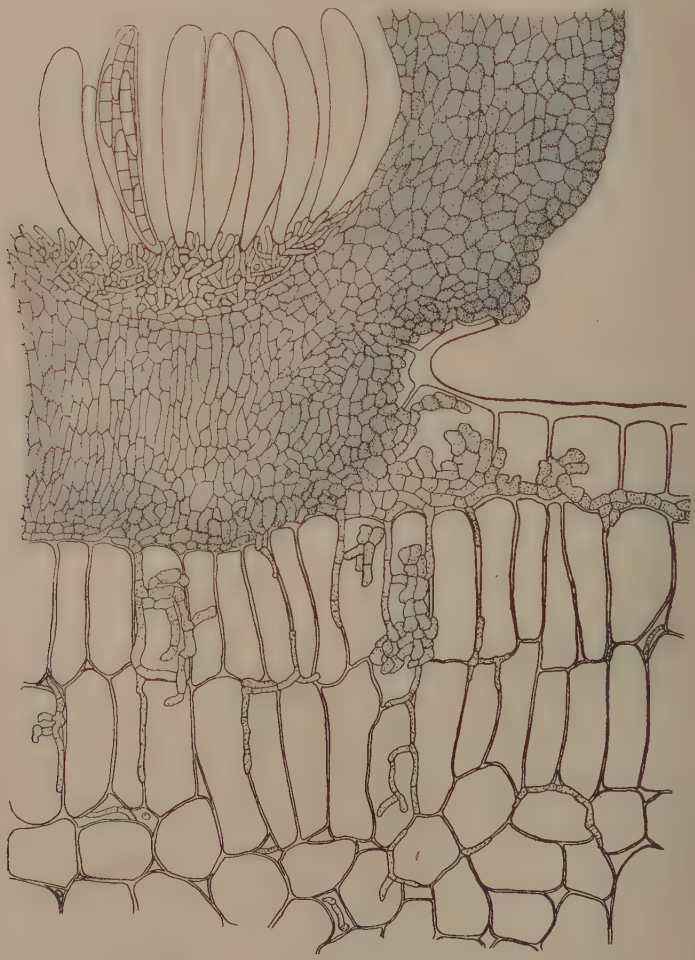

FIG. 1.—*Phragmodothella Symphoniae.*

Section through an erumpent perithecial stroma, seated on an immersed stromatic layer ; hyphae ramifying through the leaf tissue.

haud incrassati, deorsum leniter attenuati, sessiles, 70 × 10–12 μ, 8-spori. *Sporae* hyalinae fusoideae 3-septatae leves, utrinque rotundatae, ad septa haud constrictae, 20–25 × 3–4 μ.

Hab. in foliis *Symphoniae globuliferae*, Kavuma-Kahuzi Road, Kivu, Congo Belge, *F. L. Hendrickx 585*.

The hyaline to subhyaline mycelial hyphae penetrate the entire leaf tissue to the opposite epidermis in the intercellular spaces, aggregate below the epidermis to form a dark stromatic layer which enlarges, and breaks through the epidermis and cuticle to form the external stroma. In this method of formation of the external stroma the present fungus differs from species of *Parodiella*, in which the external stroma develops on the outside of the unbroken epidermis and is attached to the internal mycelium by single hyphae penetrating cuticle and epidermis and arising from the lower surface of the ectostroma. There are no haustoria in the present fungus, and this, together with the olivaceous to black colour, separates it from Parodiellinaceae. Usually the stromata are unilocular, but occasionally are 2–3-connate into compound stromata, black, hard, shining or somewhat rough on the surface, not ostiolate but dehiscent by irregular disintegration of the upper part of the wall; epiphyllous, crowded on black spots up to 10 mm. diam.; individual stromata up to 250 μ diam. and high. The stroma wall consists of thick-walled polygonal cells in several layers, about 50 μ thick, the cells angular and 5–8 μ diam., immediately below the loculus often somewhat elongated. Loculi about 100 μ diam., each containing numerous aparaphysate asci arising from the basal loose plectenchyma and erect in the loculus. Asci elongated ellipsoid-clavate, rounded but not thickened above, slightly attenuate to the sessile base, about 70×10–$12\ \mu$, 8-spored. Spores 2–3-seriate, hyaline, fusoid with rounded ends, slightly bent, 3-septate, not constricted, about 20–25×3–$4\ \mu$. (Fig. 1.)

126. **PARODIELLINOPSIS** Hansford, gen. nov. Parodiellinacearum.

Mycelium liberum nullum; intramatricale intercellulare hyalinum, in cellulis mesophylli haustoria efformans. *Ascomata* 1-locularia erumpentia, primo rufo-brunnea demum atra, glabrescentia, intus pallidiora parenchymatica; nucleus hyalinus parenchymaticus. *Asci* basales, ellipsoideo-cylindracei, breviter stipitati, 8-spori, aparaphysati. *Sporae* fusoideae brunnescentes multiseptatae.

Parodiellinopsis transvaalensis Hansford, sp. nov.

Stromata praecipue epiphylla dispersa, singula vel in greges minutos aggregata nec confluentia, primo rufo-brunnea, extus hyphis simplicibus vel ramosis 1–3-septatis usque ad 50 μ longis dispersis dense ornata, demum glabrescentia atrascentia, usque ad 400 μ diam. et alt., globosa vel leniter depressa, haud ostiolata, in maturitate superne irregulariter dehiscentia, 1-locularia. *Paries* 30–40 μ cr., multistratosus, extus cellulis rufobrunneis anguloso-rotundatis incrassatis 5–8 μ diam., intus cellulis pallidioribus vel subhyalinis 5–10 μ diam. compositus. *Hypostroma* tenue subepidermale, inferne in hyphis mycelii vergens. *Hyphae* hyalinae, intercellulares, septatae; haustoria curvata clavata 15×3–$5\ \mu$, singula in cellulis mesophylli. *Loculi* subglobosi, circa 300 μ diam., nucleo hyalino parenchymatico. *Asci* basales, erecti, ellipsoidei vel sub-cylindracei, antice rotundati incrassati (—5 μ), deorsum leniter attenuati, breviter stipitati, aparaphysati, 8-spori, 120–170×21–$28\ \mu$. *Sporae* 2-seriatae,

fusoideae, 3-septatae, haud constrictae, leniter curvatae, primo hyalinae demum flavo-brunneae, leves, utrinque obtusae, 38–52 × 8–11 μ.

Hab. in foliis *Helichrysi* sp. (? *H. acutatum* DC.), Hendricksdal, Pilgrims Rest, Transvaal, 8.1.1921, leg. Pole Evans (*Herb. Pretoria 14693*).

The stromata are scattered evenly over the upper surface of the host leaf, occasional on the lower surface, single or 2–3-aggregate in dense groups but not confluent, at first rusty brown with a dense soft outer layer of short 1–3-septate erect simple or ramose hyphae up to 50 μ long, when mature becoming glabrous and black, up to 400 μ diam. and high, globose or slightly depressed or flattened at the apex, not ostiolate, at maturity dehiscing by irregular or rounded fracture of the apex. Each contains a single loculus, with a wall of several layers of dark thick-walled cells 5–8 μ diam., enclosing several layers of more flattened thin-walled pale brown to subhyaline cells 5–10 μ diam.; the whole wall 30–40 μ thick; thickened below the loculus into a stromatic stalk portion of dark parenchyma 7–15 μ diam., up to 120 μ high by about 200 μ diam. The stromata are subepidermal in origin from a mycelium of hyaline hyphae about 5 μ wide, septate, much branched, intercellular through the whole mesophyll and forming bent clavate haustoria, up to 15 μ long by 3–5 μ thick in the host cells. This internal mycelium aggregates in the palisade tissue and upper epidermis to form a pseudo-parenchymatous hypostroma, which later breaks through the epidermis to form the external ascostroma. The loculus is about 300 μ diam., subglobose, and at first filled with a nucleus of delicate hyaline parenchyma 6–9 μ diam., in which the asci develop; as these mature the cells of the nucleus become elongated and compressed, simulating paraphyses. Asci rounded and thickened up to 5 μ at the apex, attenuate at the base into a short stipe, elongate ellipsoid to subcylindric, 120–170 × 21–28 μ, 8-spored, numerous. Spores usually 2-seriate, fusoid, slightly bent, with obtuse ends, at first hyaline, becoming yellowish brown, 3-septate, not constricted, smooth, 38–52 × 6–11 μ. There is no external mycelium and no conidia are known. The whole external stroma is closely related to *Parodiellina manaosensis* (P. Henn.) Arnaud, but differs in the absence of a conidial stage and in the phragmoseptate spores.

127. Parodiopsis Perae Arnaud in Ann. des Epiphyt. VII, p. 57, 1919.

Abundant material of this species has been collected in Uganda on *Sapium ellipticum* Pax, in both conidial and perithecial stages (*Dummer 1117*, *Hansford 2938*, *1749*, *1989*, *1784*, *2264*, *2365*, *2599*, *2842*, *2888*, *3197*, *3258*); in Proc. Linn. Soc. CLIII, p. 7 (1941) these were referred to *Parodiella melioloides* (B. & C.) Wint.

Very young colonies show the conidia germinating from one or more cells, producing hyphae of the normal external mycelium; these extend until they reach a stoma, where they form a stomopodium, from which the internal mycelium develops and penetrates the mesophyll, producing haustoria. Meanwhile the external hyphae continue growth, spreading outwards over the leaf and forming more stomopodia and internal mycelium, eventually reaching a colony diameter of up to 10 mm. A few mycelial setae are formed but are normally obscured by the dense conidial

fructification. Mycelial setae erect, concolorous or paler at the simple apex, septate, slightly nodulose-geniculate above at minute apiculate scattered sterigmata, on which single globose-piriform microconidia are formed ; occasionally these can be found on the leaf surface anastomosing with the hyphae of the external mycelium. The *Septoidium lateritium* (Syd.) Arnaud conidial stage develops on a dense plate of cells formed by branching of the mycelial hyphae ; these cells elongate upwards to form the simple conidiophores, each bearing a single terminal conidium ; conidia elongate clavate, widely rounded at the apex, truncate at the base, 2–4-septate, not constricted, smooth, at first yellow becoming rufous brown, 50–70 × 15–20 μ. The conidial stage forms a reddish brown cushion above the leaf surface. The haustoria of the internal mycelium are somewhat helicoid-clavate, about 20 μ long by 5–8 μ wide ; in the Uganda specimens less spiral than those drawn by Arnaud and approaching those of *P. melioloides* drawn by him. The stomopodia are lateral on the hyphae, continuous or rarely 1-septate, irregularly lobed, covering the whole stoma and guard cells, producing one or more internal hyphae through the stoma, very variable in shape, up to 25 × 18 μ. The perithecia appear to develop from a single cell on the free side of the external hyphae; they are described by Arnaud. In Uganda this fungus is very common on *Sapium ellipticum*, of which few specimens in the region around Lake Victoria remain free throughout the year ; hitherto it has not been found on any other host, leading one to the suspicion that it is strictly host-limited in its parasitism.

128. **Parodiopsis escharoides** (Syd.) Hansford, comb. nov.

Syn. *Henningsomyces escharoides* Syd. in Ann. Myc. XXIII, p. 331 (1925).

Colonies hypophyllous only, on indistinct yellowed areas of the leaf, dark, angular or irregular, up to 10 mm. diam., or confluent and larger, pulverulent to velvety. External hyphae irregular, closely adpressed to epidermis but easily detached, straight or slightly torulose, loosely reticulate-ramose and interwoven, pellucid dark brown, remotely septate, 5–10 μ wide, exhyphopodiate, bearing scattered stomopodia. Stomopodia subglobose to cylindric above, irregularly lobate below and producing one to several hyphae penetrating into the stoma, 6–20 μ long by up to 18 μ wide. Internal mycelium hyaline, septate, intercellular, producing clavate haustoria about 20 × 7–10 μ in the cells of the mesophyll. Conidiophores mostly in the younger parts of the colony, rather densely aggregate, more or less procumbent, slightly torulose, simple, 20–80 × 5–10 μ, each producing a single terminal conidium. Conidia oblong-clavate to oblong fusoid, widely rounded at the apex, attenuate to the truncate base, (1)–2-septate, not constricted, opaque dark brown, 40–63 × 17–21 μ.

Perithecia irregularly scattered, loosely to closely aggregate, superficial on the external mycelium, globose, 120–200 μ diam., astomous, sometimes attenuate towards the vertex, irregularly dehiscent above when mature, ferruginous to rufous brown when young, becoming opaque black. Wall of the single loculus 20 μ thick, of one to three layers of irregular angular cells 10–15 μ diam., opaque brownish-black ; below the loculus the stroma tissue is often somewhat thicker. Nucleus of delicate hyaline parenchyma. Asci few, up to 6, widely clavate, ellipsoid or oblong-ovate, widely rounded

at the apex and more or less attenuate to the subsessile base, thick-walled 8-spored, p. sp. 75–90 × 40–51 μ. Spores 2-seriate, oblong to ellipsoid, attenuate slightly towards the base, obtuse at the ends, straight to slightly bent, 1-septate, more or less constricted, dark brown with guttulate or granular contents, smooth, 38–45 × 20–24 μ, the lower cell often very slightly narrower than the upper.

On *Mauria Biringam* Costa Rica, Sydow, Fung. costaric. no. 248 (Herb. Pretoria 22974).

129. Parodiopsis advena Syd. in Ann. Myc., xxviii, p. 156 (1930).

On *Heterotrichum macrodontia*, Venezuela, Sydow, Fung. venez. no. 186 (Herb. Pretoria 28175).

This is an aberrant species of the genus in the following characters: The colour is olivaceous rather than rufous-brown, the external mycelium is epiphyllous and bears scattered hyphopodia from which the internal mycelium arises, penetrating direct through the very thin cuticle of the host. The internal hyphae are hyaline, much branched, 2·5–3 μ wide; no haustoria were found, but the host cells are very small and the whole leaf is only about 60 μ thick. No conidia were found. The description given by Sydow is accurate.

130. **Perisporina Struthanthi** (P. Henn.) Hansford, comb. nov.

Syn. *Perisporiopsis Struthanthi* P. Henn.
Parodiopsis Struthanthi (P. Henn.) Arnaud.

Examination of the specimen in Herb. Kew. shows the spores elongate, broadest in the middle, attenuate-rounded at the ends, thin-walled, hyaline to pale yellowish-brown, 1–5-septate, not constricted, smooth, 56–84 × 12–15 μ. Arnaud distrusted Hennings's original description of multiseptate spores, but the Kew specimen appears to be more mature than that examined by Arnaud. The violet colour of the perithecia, mentioned by Hennings, is shown by some of the Kew material, and is due to a Moniliaceous hyper-parasite; healthy perithecia remain brown to dark brown in colour.

131. Nematostigma obducens Syd. in Ann. Myc., xi, p. 262, 1913.

Examination of part of the type collection on *Scutia*, South Africa, in Herb. Pretoria, shows the following characters:—

Colonies hypophyllous, more or less orbicular, 1–3 mm. diam., dense and somewhat raised in the centre, thinner and radiate towards the edge, smooth. Mycelium of pale yellowish to dark brown, little branched, straight or flexuous radiating reticulate hyphae 5–8 μ wide, rather thin-walled, septate (cells 25–50 μ long), irregularly branched and anastomosing to form a close reticulum. Stomopodia scattered along the hyphae, lateral, continuous, irregularly lobed to ellipsoid, up to 23 μ long by 11 μ wide. Internal mycelium developed from the stomopodia through the stomata, the sub-stomatal cavity being filled with a pseudo-parenchymatous hyaline "hypostroma" from which hyaline septate hyphae ramify sparingly through the lower mesophyll, apparently not extending up to the palisade tissue; no haustoria were found; internal hyphae 3–8 μ wide. Perithecia developed on the external mycelium, sessile, entirely superficial,

numerous, globose, 140–200 μ diam., violet-black to brownish black, with round to irregular apical pore at maturity, set with a few to numerous straight or slightly flexuous hyphae, simple, obtuse, septate, up to 110 μ long by 5–9 μ thick. Perithecial wall dark brown, parenchymatous, 20–30 μ thick around the sides and apex, composed of 2–3 or more layers of dark brown irregularly angular-rounded cells with thickened walls, on the surface rather loose and rounded, giving a furfuraceous appearance varying to light brownish buff under a lens ; enclosing two or three layers of more compressed hyaline, indistinctly fibrous thin-walled parenchyma. The whole nucleus of the young perithecium is filled with delicate hyaline parenchyma, in which the asci develop from the base. Asci elongate ellipsoid to saccate, sessile to subsessile, 70–90 × 24–30 μ, 8-spored, aparaphysate, rounded and thickened up to 6 μ at the apex, more or less attenuate to the base. Spores parallel, cylindric with rounded, slightly attenuate ends, often narrower towards the base than at the apex, straight or very slightly bent, 6–9-septate, not or very slightly constricted before germination, at first hyaline, finally pale yellow-brown to olivaceous brown when mature, 42–55 × 7–9 μ. The ground tissue of the nucleus breaks up into irregular columns of cells between the asci, which Sydow described as filiform paraphyses. The whole outer part of the perithecium and the external mycelium has a yellow dye soluble in lacto-phenol. No conidial stage was found. The spores swell at germination and then appear strongly constricted ; hyphae are produced from several cells and form stomopodia on reaching the stomata of the host.

The type-collection is parasitised by a fine pale olivaceous mycelium belonging to some unknown fungus ; this mycelium was originally given as that of *Nematostigma*, which was described as hyper-parasitic upon the wider mycelium. The germination of *Nematostigma* spores has finally proved the original conception of the fungus to be incorrect, and the generic diagnosis is therefore emended :—

Nematostigma Sydow emend. Hansford.

Fungi in foliis parasitici. *Mycelium externum* exhyphopodiatum dilute brunneum, stomopodia ferens. *Mycelium intramatricale* per stomata in mesophyllum penetrans, intercellulare, hyalinum. *Perithecia* superficialia, globosa, brunnea, glabra vel hyphis laxe vestita, apice poro pertusa, nucleo hyalino parenchymatico. *Asci* pauci, basales, ellipsoidei, aparaphysati, 8-spori. *Sporae* parallelae, cylindraceo-fusiformes, phragmoseptatae, dilute coloratae.

A number of other species, which had previously been assigned to this genus, have recently been referred in another paper to a new genus *Phaeophragmeriella*.

132. The genus MELIOLINA Syd. in Ann. Myc., xii, p. 555, 1914.

We have examined specimens of most species which have been assigned to this genus, and give the results of our investigations below ; a number of species placed here by Stevens (Ann. Myc. xxv, p. 416, 1927) are here removed to other genera. Our revised conception of this genus is as follows :—

Mycelium brown, superficial, exhyphopodiate, parasitic on leaves,

forming stomopodia ; mycelial setae numerous, erect, more or less furcate above, often encrusted with crystals of calcium oxalate. Perithecia superficial on the external mycelium, irregularly globose, astomous, dark brown to black, often setose. Asci with evanescent filiform paraphyses, 2–8-spored. Spores elongate with rounded ends, coloured, phragmoseptate. Conidia unknown. Internal mycelium entering the stomata from the stomopodia of the external hyphae, intercellular, hyaline, septate, wide, penetrating the whole mesophyll, not forming haustoria. (Fig. 2.)

Key to accepted Species.

Mycelium with short lateral branches simulating hyphopodia :
- Setae branched ..... *cladotricha.*
- Setae simple.
  - Spores 70–80 × 20–25 μ ..... *Glaziovii.*
  - Spores 43–47 × 11–14 μ ..... *philippinensis.*

" Hyphopodia " none.
- Spores 4-septate without hyaline bands ..... *orbicularis.*
- Spores 3-septate.
  - Mycelial setae simple ..... *malaccensis.*
  - Mycelial setae simple or branched ..... *haplochaeta.*
  - Mycelial setae all branched.
    - Spores cylindric, 44–70 × 10–13 μ ..... *mollis.*
    - Spores with large central cells.
      - Spores 45–60 × 14–19 μ ..... *octospora.*
      - Spores 45–65 × 18–22 μ ..... *arborescens.*
      - Spores 70–85 × 24–28 μ ..... *Shepherdii.*

133. MELIOLINA CLADOTRICHA (Lév.) Syd. in Ann. Myc., XII. p. 553, 1914.

Léveillé described his *Meliola cladotricha* as occurring on Myrsinaceae, Borneo ; Gaillard in his account of the species (Le Genre *Meliola*, p. 46, 1892) says it occurs on *Syzygium*, Borneo ; on *Melaleuca*, New Guinea and on *Eugenia*, Australia. Presumably Gaillard's first reference indicates a re-determination of the host of Léveillé's type specimen, and until this becomes available again for examination we must assume that Gaillard's description is accurate. This includes both capitate and rather abnormal mucronate hyphopodia, the whole mycelial characters corresponding closely to those given below for *M. Glaziovii*, while the spores are like those of *M. arborescens*. We have not encountered any *Meliolina* exactly corresponding to Gaillard's description.

134. **Meliolina Glaziovii** Hansford, sp. nov.

Plagulae hypophyllae atrae velutinae. *Mycelium* ex hyphis atrobrunneis sinuosis reticulatis ramosis 6–8 μ crassis, septatis compositum. *Hyphopodia* atypica, lateralia vel terminalia, 1–2-septata, cellula apicali subglobosa 18–20 μ diam. *Perithecia* dispersa globosa atra subcarbonacea glabra 200–250 μ diam. *Asci* non visi. *Sporae* brunneae fusoideae utrinque rotundatae, 3-septatae, leniter constrictae, leves, 70–80 × 20–25 μ. *Setae myceliales* numerosae erectae atrae plus minusve curvatae, obtusae, usque ad 400 × 8–9 μ, simplices.

Hab. in foliis ignotis, Brazil, *Glaziou 18779* in Herb. Kew.

The mycelial characters correspond closely with Gaillard's description of *M. cladotricha*, but the setae and spores are quite different ; the latter

have no hyaline bands as in many other species of the genus. The "hyphopodia" of *M. Glaziovii* bear no relation to those of *Meliola* and are not closely adpressed to the host, but rather elevated above the rest of the mycelium ; no basal pore connecting with an internal haustorium is present. The specimen was found in Herb. Kew. sub "*Meliola orbicularis*" and the material was insufficient to section to determine the method of parasitism.

135. Meliolina orbicularis (Berk. & Curt.) Stevens in Ann. Myc., xxv, p. 417, 1927.

Examination of the type, *Wright 557*, and of *Wright 880* in Herb. Kew., shows that the fungus is growing on the stem of an unknown host, forming dense velvety-black colonies, with numerous perithecia scattered among the mycelial setae. Around the edge of the colonies it is possible to determine that the setae arise in fascicles or singly from a subcuticular plate of mycelium. Repeated preparations have failed to reveal any trace of superficial mycelium comparable with that of other species of this genus, and in this character the fungus resembles the description of *Acantharia*. No hyphopodia or similar structures are present. The perithecia are conical, sometimes somewhat attenuate below, glabrous, black, subcarbonous, rather thick-walled, brittle, roughened on the surface by the convex to shortly papillate cells. Asci not seen. Spores cylindric, dark brown without hyaline bands, thick-walled, 4-septate, slightly constricted, the end cells broadly rounded, smooth, 55–65 × 16–20 μ. Mycelial setae erect, uncinate or irregularly bent to almost straight, opaque black, obtuse, simple, very numerous, apparently produced by every cell of the mycelium, up to 250 × 9–11 μ.

As far as is known this fungus has not been collected since Wright, and new collections are needed to determine its affinities. Gaillard considered it a *Meliola* in which the mycelium produces setae instead of hyphopodia, but though the spores have the same colour and shape as those of species of *Meliola*, the subcuticular nature of the mycelium separates it definitely from this genus. Eventually it may prove necessary to erect a new genus for this species, but we consider it best to await further collections.

136. Meliolina malaccensis (Sacc.) Trott. in Syll. Fung., xxiv, p. 360, 1926.

Specimen : Baker, Fungi malay. 451, on *Wormia suffruticosa*, Singapore, in Herb. Kew. :—

Colonies hypophyllous, up to 3 mm. diam. or confluent and then reaching 20 mm., irregular, becoming black and velvety ; mycelium of creeping hyphae, dark brown, reticulate-ramose and loosely anastomosing, septate, exhyphopodiate, stiff, 5–6 μ wide. Mycelial setae numerous and similar to those on the perithecia, simple septate, dark brown, straight, 300–350 × 5–5·5 μ wide at the base, obtusely rounded and 3–4 μ wide at the apex. Perithecia globose, astomous, setose over the lower two-thirds, black, 250–300 μ diam.; wall parenchymatous, dark brown, possibly 2- layered ; asci oblong-clavate, rounded but not thickened at the apex, attenuate or nodose-stipitate below, 75–95 × 25–32 μ ; paraphyses filiform, evanescent ; spores 4–8, 2–3-seriate, ovate to long ellipsoid, 3–septate,

very slightly constricted at one or more septa, smooth, thick-walled, dark brown except at the extreme subhyaline ends through which germination occurs, (35)–40–45 × (12)–14–17 μ. The perithecia are not buried beneath a mat of setae as in some other species ; no conidial form is known.

137. Meliolina mollis (Berk. & Br.) von Hoehnel in Sitzb. K. Akad. Wiss. Wien, cxxviii, p. 557, 1919.

Syn. *Meliola mollis* Berk. & Br.

Dimerosporium mollis (Berk. & Br.) Sacc.

Winter in Hedwigia p. 25, 1887. sub *Meliola cladostricha* Lév.

Description after von Hoehnel :—

Colonies rounded, easily detached, soft, woolly, dense, umber-brown, hypophyllous, about 600 μ thick, flat, 10–25 mm. diam., with the perithecia in the centre covered by the mycelial setae. At first the fungus forms small radiate colonies of brown-violet straight hyphae, little branched, thin-walled, 7–10 μ wide, adherent to the epidermis, without hyphopodia and encrusted with oxalate crystals on their ends. Later these colonies become thicker and deeper as the mycelial setae and perithecia are formed. Setae erect on the mycelium, numerous, up to 500 μ high, mostly black opaque, 8 μ wide below and 3–4 times dichotomous above, the last twigs being 3–4 μ wide. The upper branches of the setae form a tight velvety layer, below which the perithecia are formed on the 3–4-layered basal hyphae ; perithecia squat globose, up to 500 μ diam. and about 300 μ high, rough, opaque black, thin-walled and covered with simple opaque setae 130 × 6 μ ; no ostiole or pore. The contents consist of numerous ovate 8-spored asci 105–120 × 26–36 μ, arising from the base of the perithecium between numerous slimy-diffluent paraphyses 4–5 μ wide. The violet-brown spores are 2-seriate and parallel in the ascus, long-cylindric, rounded at the ends, 3-septate, constricted, 56–64 × 12–13 μ, the cells uniform in size and colour. On *Syzygium Jambolanum*, Ceylon.

In our examination of the type material in Herb. Kew. no violet tint was found in hyphae or spores ; the latter are 44–52 × 10–13 μ, each end having a minute hyaline band around the tip, leaving a dark thick cap which sometimes invaginates at the thinner wall of the hyaline band ; a less distinct light band occurs on some spores at the base of each end cell. The following specimens were found to be indistinguishable from *M. mollis* ;—

Sydow, Fung. exot. exs. 124 on *Eugenia Jambolana*, distributed as *M. pulcherrima* Syd.

Sydow, Fung. exot. exs. no. 383 on *E. Jambolana*, Philippines ; *Petch 4041* on *Eugenia Neesiana*, Ceylon ; and a specimen in Herb. Kew. marked " *Meliola octospora* Cooke ex M. J. Berkeley, Ceylon," on unknown host.

Butler 1034 on *Eugenia Jambolana*, Wynaad, S. India, in Herb. Imp. Myc. Inst. Kew, was determined by Sydow as *M. cladotricha* ; it undoubtedly belongs to *M. mollis* :—

Colonies hypophyllous, brownish black, velvety, irregular to rounded or somewhat radiating at the margin, often confluent, 8–10 mm. diam. when single, closely adherent to the host leaf. Mycelium of dark brown

exhyphopodiate, straight or slightly curved firm thick-walled septate hyphae 6–8 μ wide, densely and irregularly branched, not constricted at the septa, cells up to 45 μ long, often arranged in strands of 2–6 parallel hyphae. A few short lateral branches were found, 0–2-septate, up to 30 μ long, attenuate at the ends ; these probably correspond to Gaillard's "mucronate hyphopodia." Mycelial setae very numerous and forming a velvety layer 200–300 μ high over the colony, 2–3-dichotomous, the main axis almost opaque brown-black, more or less straight to somewhat bent, mostly of even diameter, up to 240 μ long and 8–10 μ wide, slightly and gradually attenuate upwards to the first fork ; terminal branches paler and almost subhyaline at the tips, which are 3–4 μ wide and often encrusted with oxalate ; similar encrustations often occur laterally along the setae and mycelial hyphae. Perithecia scattered, usually buried below the mycelial setae ; black, globose or somewhat flattened, 300–350 μ diam., 200–250 μ high ; the upper quarter black and shining, with a few scattered oxalate crystals on the surface, which is slightly roughened by the convex outer cell walls, astomous, brittle when dry. The remainder of the perithecium bears scattered radiating or ascending setae, slightly lighter than those of the mycelium, usually simple, obtuse, straight or slightly bent, or the lowest more or less sinuous and resembling mycelial hyphae, septate, up to 150×6–7 μ. Perithecial wall tough leathery-membranous, apparently of two layers of cells, the outer, polygonal-rounded, rather thick-walled, very dark brown and subopaque, with the outer wall convex to papillate or growing out into a seta. Inner layer lighter and thin-walled, cells about the same size. Cavity of perithecium filled with asci and paraphyses ; asci broad ellipsoid with short nodose foot, 4–8-spored ; no unbroken asci found. Paraphyses indistinct, filiform, mucose-diffluent. Spores dark brown, cylindric, 3-septate, thick-walled, smooth, slightly constricted at all septa, end cells rounded with a sub-terminal hyaline band around a dark thick-walled cap often invaginated at the light band ; a second light band occurs near the base of each end cell and others on each side of the central septum ; spores 55–70×12–13 μ, usually slightly bent, the cells approximately equal in length and width.

138. Meliolina octospora (Cooke) von Hoehnel in Sitzb. K. Akad. Wiss. Wien, cxxviii, p. 557, 1919.

Syn. *Meliola octospora* Cooke.
Meliolinopsis octospora (Cooke) Beeli.
Meliolina sydowiana Stev. in Bull. Bishop Mus., Hawaii, xix, p. 46, 1925 (ex descr.).

Cooke's material in Herb. Kew. on *Eugenia* sp., Mauritius, leg. Bruce, 1840, has been re-examined :—

Colonies hypophyllous, brownish black, velvety, dense, 2–5 mm. diam., very slightly radiate towards the edges. Mycelium of dark brown hyphae 5–7 μ wide, rather thick-walled, more or less irregularly bent, branched, forming a dense network, often with 2–6 hyphae in a strand, septate, the cells 15–35 μ long, often lying in 2–3 layers, exhyphopodiate. Stomopodia scattered along the hyphae, continuous, up to 25 μ long,

cylindric or variously swollen or lobed, sending each a single hypha into the stoma. Internal mycelium hyaline, of wide (6–15 μ) hyphae,

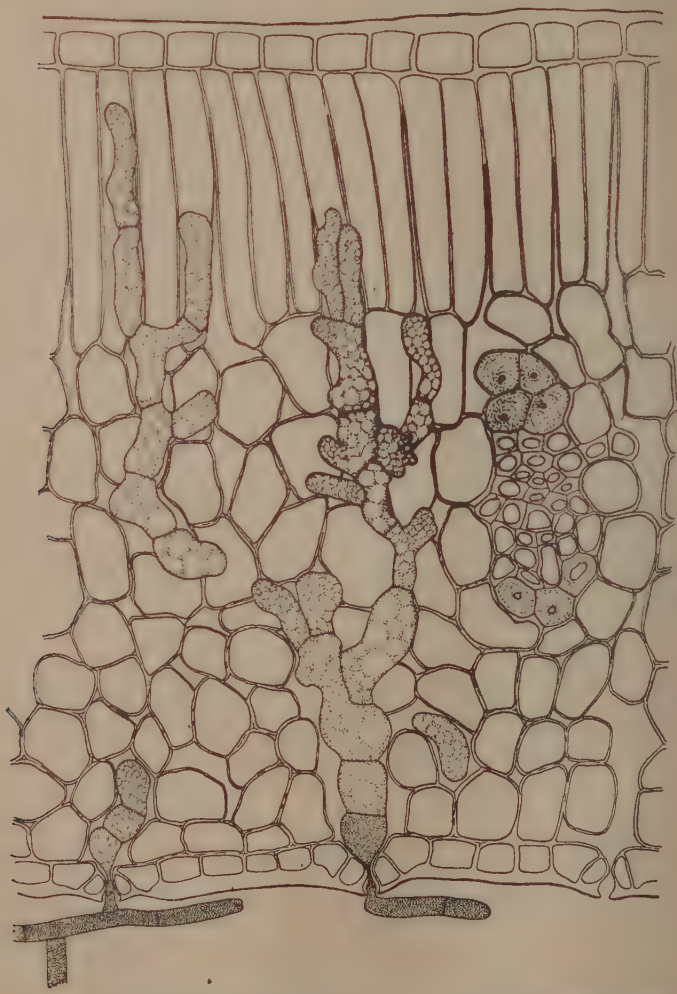

Fig. 2.—*Meliolina octospora* :—Transverse section through leaf showing internal mycelium. × 480.

septate, irregularly flexuous, much branched, entirely intercellular and not forming haustoria, penetrating almost to the upper epidermis. (Fig. 2.)

Mycelial setae numerous, forming a velvety layer over the whole colony, erect, 7–10 μ wide at the base, slightly attenuate to the first fork, dark brown to subopaque, septate, 2–3-dichotomous above, the terminal branches attenuate to the obtuse subhyaline apex 3–4 μ wide, often encrusted at the sides and apex with oxalate. Perithecia scattered beneath the setal layer, superficial on the external mycelium, black, globose or somewhat flattened, smooth around the apex, with scattered simple setae on the sides and around the base, on the surface cells merely convex to papillate ; perithecial setae up to 150×6–$8\ \mu$, obtuse. Only small unripe perithecia were found on this material, so that dimensions of ripe perithecia, asci and spores cannot be determined ; young asci mixed with paraphyses were found. Cooke gave the asci as saccate, usually 8-spored ; spores 3-septate, strongly constricted, brown $45 \times 18\ \mu$.

A second specimen in Herb. Kew, determined by Cooke as *M. octospora*, is *Bailey 506* on ? Sapindaceae, Brisbane, 1886 :—

Hypophyllous, colonies brown to almost black, up to 3 mm. diam., radiating, velvety. Mycelium as in the type. Mycelial setae as in the type but up to 500 μ high. Perithecia scattered, black, globose-flattened, up to 300 μ diam. and 200 μ high, astomous, brittle when dry, with wall of 2–3 layers of polygonal cells, thick-walled on the exterior ; setae as in the type, up to 100 μ long. Asci numerous, wide ellipsoid, attenuate below into a short wide foot, broadly rounded at the apex, with firm thick wall, 8-spored. Spores cylindric-ellipsoid, dark brown, smooth, 3-septate, constricted, some strongly, usually almost straight, 44–50×14–$18\ \mu$, with subhyaline bands as in *M. mollis*, the central cells distinctly larger than the end cells. (Fig. 2.)

The following specimens also belong to *M. octospora* :—*Hendrickx 1671* on *Syzygium* sp., Bambesa, Congo Belge ; *Hansford 3179, 3366* on *S. cordatum*, Entebbe Road, Uganda ; and the following numbers from Herb. Pretoria :—

On *S. Legati*, Zoutpansberg, Transvaal, 33056 ;
on *S. Gerrardi* : Woodbush, Transvaal, 28337, 17754, 17756 ; Entabeni, Transvaal, 26112 ;
on *S.* sp. : Woodbush, Transvaal, 32751.

139. Meliolina arborescens (Syd.) Syd. in Ann. Myc., xii, p. 553, 1914.

Syn. *Meliola arborescens* Syd.
Meliolina Yatesii Syd., l.c., xv, p. 195, 1917.
Meliolinopsis Yatesii (Syd.) Beeli.
Meliolina radians Syd., l.c., xii, p. 553, 1914.

Colonies brown to brownish-black, orbicular to irregular, hypophyllous, 5–20 mm. diam., velvety, sometimes somewhat radiate ; mycelium of brown, irregularly and sparsely branched, more or less flexuous, septate (cells up to 40 μ long) exhyphopodiate hyphae, with stomopodia as in *M. octospora* and similar internal mycelium through the stomata. Mycelial setae very numerous, erect, 1–3-dichotomous above, up to 450×7–$10\ \mu$, branches slightly attentuate to the obtuse paler apices. Perithecia scattered beneath the mycelial setae, 200–400 μ diam., globose

to somewhat flattened, black, astomous, mostly with few simple obtuse perithecial setae as in *M. octospora* and *M. mollis*. Asci wide ellipsoid to saccate, up to 170×45 μ, 2–8-spored, with filiform indistinct evanescent paraphyses. Spores ellipsoid, brown, 3-septate, strongly constricted, the end cells rounded and much smaller than the middle cells which are subglobose ; end cells with subhyaline bands as in *M. mollis* ; spores 45–65×17–22 μ, end cells 12–15 μ wide and long.

Specimens :—

Philipp. Bur. Sci. 28893 on *Eugenia* sp., Philippines, distributed as *M. pulcherrima* Syd. ; *Philipp. Bur. Sci. 17373*, the type of *M. radians* ; *Philipp. Bur. Sci. 25122*, distributed as *M. arborescens* ; nos. *17319* and *17068* on *Eugenia*, Philippines, have shown no ripe perithecia and spores in material we have examined, but probably belong here ; *Philipp. Bur. Sci. 25127* and *25134*, on *Eugenia*, distributed as *M. Yatesii* ; Hooker, *s.n.* on Myrtaceae, Khasia, India in Herb. Kew. has rather thinner colonies and shorter mycelial setae with less branching, but we regard this as a difference in development.

140. **Meliolina Shepherdii** Hansford, sp. nov.

Plagulae atrobrunneae velutinae hypophyllae. *Mycelium, setae* et *perithecia M. octospora* consimiles. *Sporae* ellipsoideae atrobrunneae leves 3-septatae, fortiter constrictae, 70–85×24–28 μ, cellulis terminalibus 12–15 μ diam.

Hab. in foliis *Eugeniae cotinifoliae*, Kanaka, Mauritius, *Shepherd 18*, in Herb. Imp. Myc. Inst. Kew.

This differs from other species in the much larger and wider spores ; the end cells are almost hemispheric, with the same subhyaline bands and invaginations as *M. octospora* ; the middle cells are subglobose.

Specimens of *Meliolina philippinensis* Stev., *M. haplochaeta* Syd. and of *M. Chardoni* Toro have not been available to us for comparison with the species described above.

141. The genus BALLADYNA Rac. in Paras. Algen u. Pilze Java's, II, p. 3, 1900.

Superficial mycelium olivaceous, hyphopodiate, parasitic on leaves, setose. Perithecia superficial on external mycelium, usually with a 1-celled stalk, globose to ovate, often attentuate towards the irregular apical pore, often with setae on upper half and ' hyphal struts ' around the base ; wall parenchymatous, membranous, of one layer of polygonal cells. Asci few, usually more than one, ripening in succession, ellipsoid to ovate, aparaphysate, 8-spored. Spores oblong, 1-septate, olivaceous, smooth, constricted, the cells more or less equal. Conidia unknown. Haustoria in epidermis and sometimes in the mesophyll, coralloid and usually filling the host cell, produced singly from the hyphopodia of the external mycelium. (*Cf.* Fig. 3.—*Balladynastrum entebbeense*.)

The generic description given above is drawn up from our examination of the species enumerated below. Arnaud, followed by Gaumann, described in *B. Gardeniae* (*B. velutina*) penetration of the stomata by hyphae which formed haustoria in the mesophyll ; we have been unable to confirm this observation in any of our own collections in Uganda of

any species, nor in South African collections in Herb. Pretoria. In all these the haustoria occurring in the deeper tissues of the leaf are connected individually to the superficial hyphopodia by fine filaments corresponding exactly to those between the epidermal haustoria and the hyphopodia; these filaments do not branch, each bears a single terminal haustorium

FIG. 3.—*Balladynastrum entebbeense* :—Transverse section through leaf showing haustoria. × 750.

and arises singly from a hyphopodium. It is noteworthy that where we have found germinating spores on the surface of the host leaf, these invariably form a hyphopodium from one cell, which immediately sends a haustorium through the cuticle into the underlying epidermal cell, prior to any development of the external mycelium. This type of spore

germination is usual in *Meliola* and *Asterina*, but in other genera possessing internal mycelium in the host, considerable modifications in the germination of the spores are encountered. The distinction between hyphopodia and short lateral branches of the hyphae is easily made by the constant presence of a minute pore on the lower surface of the hyphopodium next the cuticle, marking the attachment of the haustorial filament.

Key to accepted species.

Perithecia setose on upper half.
- Colonies dense; mycelial setae rough with bulbous base; perithecial setae -120 μ obtuse, spores 19–22×7–9 μ ..... *magnifica.*
- Colonies thin; mycelial setae smooth, obtuse; perithecial setae -50 μ, obtuse.
  - Spores 17–22×7–9 μ ..... *ugandensis.*
  - Spores 23–28×9–13 μ ..... *leonensis.*

Perithecia glabrous above, some with 'hyphal struts' below.
- Spores 13–16×4–4.5 μ ..... *Ledermannii.*
- Spores 17–19×4–4·5 μ ..... *Melodori.*
- Spores 17–22×7–10 μ.
  - Hyphal struts present ..... *tenuis.*
  - Perithecia quite glabrous ..... *velutina.*
- Spores 20–28×10–13 μ.
  - Hyphal struts present, hyphopodia globose ..... *Butleri.*
  - Perithecia quite glabrous; hyphopodia lobate, often darker than hyphae..... *Deightonii.*

142. Balladyna magnifica (Syd.) Hansf. in Proc. Linn. Soc., cliii, p. 14, 1941.

On *Canthium vulgare*, Uganda. This species appears to be restricted to a single host, on which it is very common. The description of *Dimerium Autrani* (P. Henn.) Sacc. & Trott. on *Canthium* sp., Eritrea, strongly suggests this same species, but we have not seen specimens of this.

143. Balladyna ugandensis Syd. in Ann. Myc., xxxvii, p. 202, 1939.

On *Rutidea odorata*, Uganda, *Hansford 2317.*
On *Canthium ciliatum*, South Africa, Herb. Pretoria 14150, 33104, 22355, 22428.
On *Canthium spinosum*, South Africa, Herb. Pretoria 1675, 32167.
On *Canthium* sp., South Africa, Herb. Pretoria 14701.
On *Oxyanthus Gerrardi*, South Africa, Herb. Pretoria 17723.

144. Balladyna tenuis Hansf. in Proc. Linn. Soc., cliii, p. 14, 1941.

On *Canthium vulgare*, Uganda, *Hansford 2485, 2487, 2859, 3059, 3227.*
On *Leptactinia* sp., Uganda, *Hansford 2342.*
On *Canthium* sp., Uganda, *Hansford 3202, 3387.*
On *Plectronia Guienzii*, South Africa, Herb. Pretoria 17740, p.p.

145. Balladyna velutina (Berk. & Curt.) von Hoehnel in Ann. Myc., x, p. 16, 1912.

Syn. *Asterina velutina* B. & C.
Asterina phaeostroma Cooke.
Meliola Psilostomae Thuem.
Dimerosporium Psilostomatis (Thuem.) Sacc.
Dimerium Psilostomatis (Thuem.) Sacc.

Phaeodimeriella Psilostomatis (Thuem.) Theiss.
Balladyna Gardeniae Rac.
Dimerosporium gardeniicola P. Henn.

MacOwan 1291, part of the type collection of *Meliola Psilostomae* has been examined (Herb. Pretoria 20772, 20773) and the type of *Asterina phaeostroma* in Herb. Kew; both are identical with *B. velutina*. We have also compared the specimen of *B. Gardeniae* in Herb. Kew. with those of *B. velutina* and are unable to detect any difference on which to base their separation.

Colonies amphigenous, thin, black, effuse and frequently confluent over large parts of the host leaf. Mycelium of radiating, branched, light to dark brown, septate (15–25 μ) hyphae 5–7 μ wide, forming a loose to somewhat dense reticulum, sometimes occurring in strands of 2–3. Hyphopodia numerous, unilateral or alternate, continuous, from globose to slightly angular or lobed, 7–12 × 5–9 μ, sometimes noticeably darker than the hyphae. Mycelial setae numerous, erect, straight or slightly flexuous, opaque black or lighter at the obtuse apex, up to 180 μ long by 7–8 μ wide towards the base, 3–4 μ wide at the rounded apex, sometimes with thick asperate walls. Perithecia scattered, erect, ovate, shortly obtuse-conoid above, at first closed, later irregularly open at the vertex, 50–70 μ high by 40–60 μ diam., each on a 1-celled stalk, quite glabrous. Wall of one layer of rounded to angular parenchyma, 6–10 μ diam., membranous, usually greenish brown to brown, pellucid, often with dark granules on the outer surface. Asci aparaphysate, 1–4 in each perithecium, ripening in succession, widely ellipsoid to ovate or subglobose, 30–50 × 25–40 μ, widely rounded above, sometimes shortly nodose-stipitate, 8-spored. Spores greenish to olivaceous brown, oblong with rounded ends, 1-septate, slightly constricted, smooth, 17–22 × 7–10 μ, the upper cell usually slightly wider and shorter than the lower.

The following specimens belong to this species :—

Uganda : on *Pavetta crassipes, Hansford 2158* ;
on *Pavetta Oliveriana, Hansford 2494, 2928, 3060, 3452* ;
on *Pavetta* sp., *Hansford 1387, 3131* ;
on *Canthium* sp., *Hansford 3388* ;
on Rubiaceae indet., *Hansford 1386, 1623, 1892* ;

South Africa, Herb. Pretoria :—
on *Pavetta Bowkeri*, 12426, 6634 ;
on *Pavetta capensis*, 14214, 14215 ;
on *Pavetta lanceolata*, 10966, 22364, 1637 p.p. ;
on *Pavetta natalensis*, 14948, 9511 ;
on *Pavetta revoluta*, 6627, 21008 ;
on *Pavetta* sp., 11612, 823, 1768, 8895 ;
on *Canthium ciliatum*, 12385, 23403 p.p., 20772, 20773, 33104 ;
on *Canthium spinosum*, 28465, 28327 ;
on *Canthium Guienzii*, 17773 ;
on *Canthium* sp., 28330 ;
on *Tricalysia floribunda*, 331, 2523 ;
on Rubiaceae indet., 10886.

Philippines, Philipp. Bur. Sci. :—

on *Gardenia glutinosa*, 8891 ;
on *Gardenia didymium*, 23993.

146. Balladyna leonensis Syd. in Ann. Myc., xxxvii, p. 203, 1939.

on *Sarcocephalus*, Sierra Leone, *Deighton 555* ;
on *Oxyanthus* sp., Uganda, *Hansford 3288, 3383* ;
on Rubiaceae indet., Uganda, *Hansford 3307*.

147. Balladyna Butleri Syd., l.c., ix, p. 388, 1911.

On *Bambusa*, India, Philippines ; the specimen in Herb. Imp. Myc. Inst. Kew shows spores 22–25 × 10–13 μ, rather larger than those described by Sydow. The specimen Philipp. Bur. Sci. 25016 in Herb. Pretoria (no. 13638) shows this species mixed with *B. uncinata* Syd.

148. **Balladyna Deightonii** Hansford, sp. nov.

Plagulae epiphyllae atrae velutinae, usque ad 10 mm. diam., in confluendo majores. *Mycelium* ex hyphis undulatis atrobrunneis irregulariter ramosis reticulatis septatis (10–25 μ), 5–7 μ crassis compositum. *Hyphopodia* numerosa alternata vel unilateralia, atrobrunnea, irregulariter lobata, rarius subglobosa, 7–13 × 7–13 μ. *Setae myceliales* numerosae erectae atrobrunneae subrectae usque ad 190 μ long. et basi 6–10 μ cr., simplices obtusae asperulatae, crasse tunicatae. *Perithecia* superficialia dense stipata, globosa vel piriformia, breviter stipitata, 60–100 μ alt. et 45–60 μ diam., glabra, primo omnino clausa, dein ad verticem papilliformiter producta et irregulariter aperta. *Paries* unistratosus ex parenchyma 6–12 μ diam. angulosa compositus, atro-viridis pellucidus. *Asci* 2–6, aparaphysati, late ellipsoidei vel subglobosi, 8-spori, 40–50 × 30–40 μ, sessiles vel nodoso-stipitati. *Sporae* atrobrunneae vel virideo-brunneae, oblongae utrinque rotundatae, 1-septatae, leniter constrictae, leves 22–28 × 10–12 μ ; cellulis aequalibus vel superiore lenissime breviore et crassiore.

Hab. in foliis *Pavettae* spec., Sierra Leone, *Deighton 1033*, typus, in Herb. Imp. Myc. Inst. Kew ; in foliis Rubiacearum spec. indet., Ankole, Uganda, *Hansford 2099*.

149. Balladyna uncinata Syd. in Ann. Myc., xii, p. 546, 1914.

This is represented in Herb. Pretoria by part of the type-collection distributed by Sydow, and by Philipp. Bur. Sci. 25016. Preparations made from both these were unsatisfactory and re-examination of the species, preferably from freshly collected material, is required to determine its structure, method of parasitism and relationships. For the present we regard it as a doubtful species of this genus.

Material of *B. affinis* Syd., described on *Cecropia*, Brazil, has not been available to us for study ; ex descr. it seems to us unlikely that it is correctly placed in *Balladyna*.

150. Armatella Litseae (P. Henn.) Theiss. & Syd. in Ann. Myc. xiii, p. 235, 1915.

The specimen Sydow, Fung. exot. exs. 524 in Herb. Pretoria shows the following characters :—

Colonies epiphyllous, dense, subcrustose. Mycelium of dark hyphae, alternately or irregularly branched, radiating outwards from the centre of the colony, dark brown, 5–6·5 μ wide, septate at intervals of 15–25 μ, almost straight. Hyphopodia alternate, capitate, concolorous ; stalk cell short cylindric 3–4 μ long by 6–8 μ wide, usually straight ; head cell stellate-lobate with 5–10 shallow lobes, 10–15 μ long by 12–18 μ wide. Mycelial and perithecial setae none. Perithecia scattered, black, subglobose on a broad base, unilocular, verrucose, 230–280 μ diam., 150–200 μ high (both Hennings' and Theissen & Sydow's measurements appear to include the thick mycelium around the base of the perithecium). Wall about 50 μ thick, the outer layers of thick-walled subopaque angular-rounded cells up to 25 μ diam., the inner layers of smaller subhyaline compressed thin-walled parenchyma ; the loculus lined with one layer of compressed thin-walled cells enclosing a nucleus of delicate hyaline parenchyma in which the asci develop from the base ; loculus wall thinner (about 20 μ) at the base of the perithecium next the leaf. Dehiscence occurs by irregular fracture of the apex. The radiate structure of the upper wall described by Theissen and Sydow refers merely to the mycelial mat around the edge of the perithecium. Asci subsessile, ellipsoid, containing 4–8 spores, aparaphysate with the remains of the ground parenchyma between them and appearing as septate columns ; asci 50–70 × 25–35 μ. Spores irregularly arranged, oblong with rounded ends, hyaline, becoming coloured before germination, 1-septate, slightly constricted, the cells equal or the upper slightly wider, 30–42 × 11–14 μ, smooth. Each hyphopodium forms a single globose haustorium in the epidermis of the leaf, and there is no other penetration of the host. The 'hypostroma' described by Theissen and Sydow represents dead and dying host cells filled with an amorphous or granular dark pigment. A second pale olive mycelium is present in parts of this material, forming thin subcuticular plates, but is entirely unconnected with the *Armatella*.

151. **Balladynastrum glabrum** Hansford, sp. nov.

Plagulae amphigenae tenues atrobrunneae, usque ad 3 mm. diam., vel in confluendo majores. *Mycelium* ex hyphis dilute brunneis 5 μ crassis, septatis (20–30 μ), leniter undulatis, ramosis, dense reticulatis compositum. *Hyphopodia* unilateralia vel alternata, concolorata, conoidea vel hemisphaerica vel irregularia, 6–12 × 6–10 μ, continua. *Setae* myceliales et peritheciales nullae. *Perithecia* dense dispersa, atra, numerosa, breviter stipitata (–10 μ), subglobosa vel ovata, usque ad 100 μ alt. et 60–90 μ diam., vertice irregulariter aperta. *Paries* unistratosus membranaceus subpellucidus brunneus, cellulis angulosis 10–15 μ diam., 4–6 μ cr., extus granulosis. *Asci* 2–6 late ellipsoidei vel saccati, aparaphysati, sessiles, usque ad 60 × 40 μ, 8-spori. *Sporae* conglobatae, atrobrunneae, oblongae utrinque rotundatae, leves, 1-septatae, constrictae, 18–21 × 8–10 μ, cellulis aequalibus subglobosis.

Hab. in foliis *Rutideae rufipilis*, Entebbe Road, Uganda, *Hansford 2916* (typus) ; in foliis *Pavettae Oliverianae*, loc. cit., *Hansford 3061, 3132* ; in foliis Rubiacearum spec. indet., Lake Nabugabo, Masaka, Uganda, *Hansford 2115* (leg. *P. Chandler*).

Each hyphopodium forms a single coralloid haustorium in the leaf

epidermis, with no further penetration of the host. The asci ripen in succession and then collapse to make room for others. The same fungus was found on *Canthium Guienzii*, South Africa, Herb. Pretoria 1744.

152. **Balladynastrum pusillimum** (Syd.) Hansford, comb. nov.

Syn. *Henningsomyces pusillimus* Syd. in Phil. Journ. Sci., v, p. 162, 1914.

Hypophyllous, forming orbicular or irregular colonies 10–20 mm. diam., greyish brown to brownish black. Mycelium of pale olivaceous hyphae 2·5–3·5 μ wide, thin-walled, sub-straight to flexuous, irregularly branched and forming a thin reticulum. Hyphopodia scattered, concolorous, sinuous, cylindric with rounded apex to sublobate, 6–8 $\times$ 2·5–4 μ. Mycelial setae none. Perithecia densely scattered, superficial on the mycelium, supported by 2–6 radiating hyphal struts, but appearing sessile, globose to ovate, 30–45 μ diam., not ostiolate, opening by irregular fracture of the apex ; wall thinly membranous, of one layer of angular parenchyma, olivaceous brown, the cells 4–5 μ diam., smooth ; perithecial setae scattered over the upper half, erect, straight, continuous, simple, acute, dark brown to opaque, 20–30 $\times$ 3·5–4 μ. Asci few, 3–5, ripening in succession, aparaphysate, globose to ovate, 20–25 μ diam., 8-spored, with rather thick firm wall. Spores oblong with obtuse rounded ends, pale olivaceous, 1-septate, scarcely constricted, 12–15 $\times$ 3·5–4·5 μ, the cells equal.

On *Adina* sp., Philippines, *Merrill 8882* (Herb. Pretoria 13246).

The minute hyphopodia are easily distinguishable from the globose perithecial rudiments, which are darker than the mycelial hyphae ; haustoria are produced in the epidermis and there is no other penetration of the host.

153. **Balladynastrum philippinense** (Syd.) Hansford, comb. nov.

Syn. *Henningsomyces philippinensis* Syd. in Philipp. Journ. Sci., IX, p. 161, 1914.

Balladynopsis philippinensis (Syd.) Theiss. & Syd. in Ann. Myc., XV, p. 475, 1917.

On *Morinda*, Philippines ; we have not seen specimens and the transfer is made from the descriptions quoted.

154. Parenglerula Macowaniana (Thuem.) von Hoehnel, Fragm. zur Mykol., no. 525, 1910.

Syn. *Meliola Macowaniana* Thuem.
Asterina Macowaniana Kalchbr. & Cooke.
Englerulaster Macowanianus (Thuem.) Arnaud.
? *Dimerium Gymnosporiae* (P. Henn.) Syd.
? *Dimerosporium Gymnosporiae* P. Henn.
? *Englerulaster Gymnosporiae* (P. Henn.) Theiss.
? *Parenglerula Henningsii* Petrak.
? *Parenglerula Gymnosporiae* Petrak.

Colonies usually epiphyllous, black, orbicular 2–3 mm. diam., often very numerous and confluent over large areas of the host leaf. Mycelium of brown undulating hyphae 6–8 μ wide, branching irregularly and radiating outwards. Hyphopodia numerous alternate or unilateral,

continuous, hemispheric or irregularly ovate, 6–16×6–15 μ, each producing a haustorium in the epidermis below. Perithecia very numerous, black, irregularly globose, 50–120 μ diam., not ostiolate, narrowed below to a flat base about 40 μ wide. They originate as short lateral branches of the hyphae, about 20–25 μ long, divided into a short cylindric basal cell and a globose end cell, both adpressed to the leaf surface ; the terminal cell enlarges to form a plate of 15–20 cells, about 25 μ diam., and then the cells of this plate divide horizontally to form a double layer, which becomes spherical and encloses the nucleus of the developing perithecium. From the basal layer 4–8 meridian hyphae develop inside the one-layered original wall, which later degenerates into stiff mucilage, on the surface of which the remains of the wall cells float as dark irregular fragments ; the mucilage apparently is supplemented inside the perithecium and at maturity the asci and meridian hyphae are embedded in it. The meridian hyphae are erect from the base of the perithecium, 2–4-septate, greyish to greenish brown, smooth-walled, not constructed at the septa, simple, obtuse incurved above 20–45×5–7 μ, at first closely adherent but later separating as the asci develop inside and forming a loose layer around these. On the exterior of the perithecium the mucilage turns dark brown, partly obscuring the contents and often staining the upper part of the ascus wall. The asci are basal, 1–10 in each perithecium, ovate, thick-walled, broadly rounded above, contracted below into the sessile or shortly stipitate base, 4–8-spored, 55–65×40–50 μ, aparaphysate. Spores conglobate, clavate-ellipsoid, 1-septate, strongly constricted, long remaining hyaline, finally dark brown, 25–32×13–15 μ ; the upper cell slightly larger than the lower, both subglobose with smooth walls.

On *Gymnosporia* spp., South and Tropical Africa.

Though there is very strong suspicion that *Dimerium Gymnosporiae* (P. Henn.) Syd. is the same fungus as *P. Macowaniana*, comparison of the types has not been possible. It has not been possible to separate the numerous collections in Herb. Pretoria into separate species, and the writer's Uganda collections are also identical. The description of *P. Gymnosporiae* Petrak, from the Philippines leads us to suspect its identity with *P. Macowaniana*.

155. **Schiffnerula Gymnosporiae** Hansford, sp. nov.

Plagulae amphigenae orbiculares usque ad 3 mm. diam., vel in confluendo irregulares majores, tenues, leves, griseo-atrae. *Mycelium* ex hyphis reticulato-radiantibus dilute vel atrobrunneis 5–7 μ crassis, septatis (10–30 μ), irregulariter ramosis compositum. *Setae* nullae. *Hyphopodia* alternata vel unilateralia, hemisphaerica vel subglobosa, 7–9 μ alt. et 8–10 μ cr. *Perithecia* numerosa, dispersa sessilia glabra, dilute olivacea, circa 60 μ diam. et 40 μ alt. ; paries unistratosus parenchymaticus mucoso-diffluens. *Asci* 1–3, late ellipsoidei vel subglobosi, sessiles, aparaphysati, 8-spori, circa 35×25 μ. *Sporae* conglobatae brunneae oblongae utrinque rotundatae, leves, 1-septatae, distincte constrictae, 20–23×10–12 μ, cellulis aequalibus. *Conidia* olivacea falcata 3-septata haud constricta, apice rotundata, basi attenuata, hilo plano, 30–33×10–11 μ, cellulis subaequalibus, terminalibus pallidioribus ; singulariter in sterigmatibus mycelii producta.

157 SESS. (1944–5).

Hab. in foliis *Gymnosporiae buxifoliae*, Tugela R., Natal, Herb. Pretoria 14138, typus ; Louis Trichardt, Transvaal, 11851 ; in foliis *G. nemorosae*, Knysna, Cape Province, 17228 ; van Staden's Pass, Cape Province, 17262 ; Bathurst, 12370.

This species is often parasitized by *Trichothyrium elegans* Doidge. Hitherto it has not been found in Uganda, where a very similar fungus, *Clypeolella Gymnosporiae* is fairly common on *G. buxifolia* and other species of *Gymnosporia*. Young colonies of *Schiffnerula* and of *Clypeolella* are almost indistinguishable, having the same hyphopodia, as well as the same types of conidia, both falcate (*Helminthosporium*) and muriform (*Sarcinella*). At the beginning of ascus formation the differences between the genera become apparent ; the very young thyriothecium of *Clypeolella* begins as a radiate plate below the mycelial hyphae, between these and the host cuticle, while the young perithecium of *Schiffnerula* is lateral on the mycelium, and though somewhat radiate in early stages it soon loses this structure as it develops to become subglobose ; the *Clypeolella* thyriothecium retains definite traces of radiate structure around the edges even when fully mature, and as a rule is considerably larger and contains more asci than the *Schiffnerula* perithecium.

156. **Schiffnerula Cissi** Hansford, sp. nov.

Plagulae amphigenae, effusae vel orbiculares, 1–3 mm. diam., saepe confluentes, tenues, leves, griseae vel atrae. *Mycelium* ex hyphis rectis vel leniter sinuosis, olivaceis, radiato-reticulatis, 6–8 μ crassis, septatis (15–25 μ) compositum. *Hyphopodia* unilateralia vel alternata, hemisphaerica vel subglobosa 8–12 $\times$ 7–13 μ. *Perithecia* dense stipata inter hyphas mycelii, sessilia subglobosa, dilute olivacea 40–50 μ diam. ; paries olivaceus unistratosus parenchymaticus mox mucoso-diffluens. *Asci* 1–3, aparaphysati subglobosi sessiles 8-spori, usque ad 40 μ diam. *Sporae* conglobatae, oblongae utrinque obtusae, 1-septate vix constrictae, 18–21 $\times$ 8–10 μ, primo hyalinae demum brunnescentes, cellulis subaequalibus levibus. *Conidia* falcata olivacea, apice rotundata, basi attenuata, hilo plano, 3-septata, vix constricta, levia, 35–45 $\times$ 11–13 μ, cellulis subaequalibus terminalibus pallidioribus.

Hab. in foliis Vitacearum spec. indet., Jinja Road, Uganda, *Hansford 1390* (typus) ; in foliis *Rhoicissi Revoillii*, Uganda, *Hansford 2371, 3176, 3248*.

The specimen Herb. Pretoria 8994 on *Rhoicissus cuneifolius* Claridge, Natal, may belong here, but no perithecia were found on it, nor falcate conidia. Hyphae and hyphodia very similar to the above, with frequent *Sarcinella* conidia, subopaque dark brown, irregularly globose, up to 40 $\times$ 30 μ.

157. **Schiffnerula Allophyli** Hansford, sp. nov.

Plagulae amphigenae, griseae, vix conspicuae, effusae. *Mycelium* ex hyphis dilute brunneis. 6–7 μ crassis, septatis (20–40 μ) irregulariter ramosis, reticulatis compositum. *Hyphopodia* continua, subglobosa vel clavulata, alternata vel unilateralia, 10–13 $\times$ 8–10 μ. *Perithecia* dispersa subglobosa sessilia, dilute olivacea, superne mucoso-diffluentia, usque ad 100 μ diam., glabra. *Asci* aparaphysati sessiles subglobosi, 40–50 μ diam., 8-spori. *Sporae* conglobatae, dilute brunneae, oblongae utrinque

rotundatae, leves, 1-septatae, leniter constrictae, 20–23 × 9–11 μ cellula superiore leniter crassiore.

Hab. in foliis *Allophyli* spec., Entebbe Road, Uganda, *Hansford 2597* p.p. (typus), *3009*, *3117*, *3195*.

158. **Schiffnerula Rhois** Hansford, sp. nov.

Plagulae epiphyllae, tenues, griseo-atrae, leves, usque ad 3 mm. diam. *Mycelium* ex hyphis brunneis 5–6 μ crassis, septatis (15–20 μ), irregulariter ramosis, laxe reticulatis compositum. *Hyphopodia* unilateralia vel alternata, continua, hemisphaerica, concolorata, 6–10 × 6–8 μ. *Perithecia* numerosa, dispersa, subglobosa, dilute olivacea, usque ad 100 μ diam. et 70 μ alt. ; paries unistratosus parenchymaticus olivaceus mucoso-diffluens. *Asci* 2–8, in ordine maturescentes, subglobosi vel late ovati, 8-spori, sessiles, aparaphysati, 40–50 × 25–30 μ. *Sporae* conglobatae, diu hyalinae, demum dilute brunneae, oblongae utrinque rotundatae, leves, 1-septatae, leniter constrictae, 18–20 × 10–11 μ, cellulis subaequalibus. *Conidia falcata* apice rotundata, basi attenuata, hilo plano, 3-septata, haud constricta, levia, 30–37 × 9–12 μ, cellulis centralibus leniter majoribus brunneis, terminalibus pallidioribus. *Conidia sarcinelliformia* dispersa, opace atrobrunnea, muriformia, circa 30 μ diam., levia, ex cellulis 8–15 composita.

Hab. in foliis *Rhois villosae*, Entebbe Road, Uganda, *Hansford 3417* (typus), *1841*.

159. **Schiffnerula Nuxiae** Hansford, sp. nov.

Plagulae amphigenae leves tenues griseo-atrae, usque ad 3 mm. diam., vel confluentes. *Mycelium* ex hyphis dense reticulatis brunneis irregulariter ramosis 5–7 μ crassis, septatis (8–15 μ), rectis vel flexuosis compositum. *Hyphopodia* alternata vel unilateralia, continua, hemisphaerica, 7–11 × 6–10 μ. *Perithecia* dispersa subglobosa brunnea pallidescentia, usque ad 70 μ diam. et 50 μ alt. ; paries unistratosus mucoso-diffluens. *Asci* 1–3, aparaphysati, sessiles subglobosi, circa 50 μ diam., 8-spori. *Sporae* conglobatae brunneae oblongae utrinque rotundatae, 1-septatae lenissime constrictae, leves, 17–21 × 9–10 μ, cellulis subaequalibus.

Hab. in foliis *Nuxiae* (*Lachnopylidis*) spec., Woodville Forest, George, Cape Province, S. Africa, Herb. Pretoria 10931.

160. **Schiffnerula Doidgeae** Hansford, sp. nov.

Plagulae amphigenae griseo-atrae leves orbiculares vel confluentes. *Mycelium* ex hyphis dilute brunneis 5–6 μ crassis, septatis (10–30 μ), irregulariter ramosis, dense reticulatis compositum. *Hyphopodia* unilateralia vel alternata, hemisphaerica, 8–10 × 6–12 μ, continua. *Setae* nullae. *Perithecia* lateralia, dilute olivacea, circa 50 μ diam., et 40 μ alt., glabra ; paries unistratosus parenchymaticus, mucoso-diffluens. *Asci* 1–4, aparaphysati subglobosi sessiles 8-spori, circa 30 μ diam. *Sporae* conglobatae oblongae utrinque rotundatae, leves, 1-septatae constrictae, usque ad 22 × 10 μ, dilute brunneae, cellula superiore leniter crassiore. *Conidia* falcata olivacea, apice rotundata, basi attenuata in hilo plano, 3-septata, vix constricta levia, circa 35 × 10 μ, cellulis terminalibus curvatis pallidioribus.

Hab. in foliis *Cynanchi elliptici*, van Stadens Pass, Cape Province, South Africa, Herb. Pretoria 10876 (typus); in foliis *Secamonis frutescentis*, Pirie Forest, Cape Province, South Africa (12320); in foliis *Tylophorae Flanagani*, Lomana, Transvaal (1804); ibid., Woodbush, Transvaal (28345); in foliis Asclepiadacearum spec. indet., Bathurst, Cape Province (12368).

161. Schiffnerula Compositarum (Theiss.) Petrak in Ann. Myc., xxvi, p. 396, 1928.

On *Erlangea tomentosa*, Uganda, *Hansford 3053*.
On *Vernonia* spp., Uganda, *Hansford 2678, 3125*.
On *Mikania* spp., Uganda, *Hansford 3438*.
On *Mikania capensis*, South Africa, Herb. Pretoria 17163.

162. **Schiffnerula Whitfieldiae** Hansford, sp. nov.

Plagulae epiphyllae, rarius amphigenae, 1–3 mm. diam., in confluendo majores, leves, atrae, tenues. *Mycelium* ex hyphis brunneis 5–6 μ crassis, septatis (12–22 μ), ramosis reticulatis compositum. *Hyphopodia* alternata vel unilateralia, continua, hemisphaerica, 8–12 × 8–10 μ. *Conidiophora* 0–1-septata, 10–20 × 7–8 μ. *Conidia* singula falcata pedicellata, apice rotundata, 3-septata, haud constricta 30–41 × 9–10 μ, levia, olivacea utrinque pallidiora. *Perithecia* lateralia, dense stipata, subglobosa, dilute olivacea, glabra, superne mucosa, usque ad 60 μ diam. et 40 μ alt. *Asci* 1–3, globosi, aparaphysati, sessiles, circa 30 μ diam., 8-spori. *Sporae* conglobatae, oblongae utrinque rotundatae, leves, 1-septatae, leniter constrictae, 18–23 × 8–9 μ, dilute brunneae, cellula superiore leniter crassiore.

Hab. in foliis *Whitfieldiae* spec., Entebbe Road, Uganda, *Hansford 1845* (typus); in foliis *Pseuderanthemi Ludoviciani*, Kiterera, Busoga, Uganda, *Hansford 2825*; in foliis *Sclerochitonis Harveyani*, Hog's Back, Cape Province, South Africa, Herb. Pretoria 11340 *b*.

163. **Schiffnerula Viticis** Hansford, sp. nov.

Plagulae epiphyllae tenues leves brunneae vel atrae, usque ad 2 mm. diam., vel confluentes. *Mycelium* ex hyphis fuligineis flexuosis 7–8 μ crassis, septatis (10–20 μ), dense reticulatis, irregulariter ramosis compositum. *Setae* nullae. *Hyphopodia* continua, hemisphaerica 6–11 × 8–12 μ, alternata vel unilateralia. *Conidia* falcata olivacea, apice rotundata, pedicellata, 3-septata, vix constricta, circa 40 × 11 μ, utrinque pallidiora. *Perithecia* dense stipata, subglobosa, dilute olivacea, usque ad 65 μ diam., glabra, superne mucosa. *Asci* aparaphysati, sessiles, ovati vel subglobosi, 35–40 μ diam., 8-spori. *Sporae* conglobatae, oblongae utrinque rotundatae, leves, brunneae, 1-septatae, constrictae 22–26 × 10–13 μ, cellulis aequalibus.

Hab. in foliis *Viticis Fischeri*, Kazi, Kampala, Uganda, *Hansford 3066* (typus), *3397*.

164. A number of other records of what appear to be species of *Schiffnerula* have been made in Uganda and South Africa, but most of the specimens show the conidial stage only, and some may belong to *Clypeolella* spp. :—

On *Cissampelos mucronata*, Uganda, Hansford, *s.n.*; on *Peddiaea africana*, Kaneni Forest, Natal, Herb. Pretoria 27744; on *Mimusops obovata*, South Africa, Herb. Pretoria 12266, 11365; on *Jasminum* spp., Uganda, *Hansford 2680*, *2641*; on *Solanum torvum*, Uganda, *Hansford 1274*.

165. MITTERIELLA ZIZYPHINA Syd. in Ann. Myc., XXXI, p. 95, 1933.

On *Zizyphus mauritianus*, Bugerere, Uganda, *Hansford 2805*; on *Z. mucronatus*, Tzaneen, Transvaal, Herb. Pretoria 32725.

In both these specimens the colonies are epiphyllous, smooth black, up to 8 mm. diam. and often confluent. The mycelium consists of a dense network of brown hyphae 5–7 μ wide, the cells 10–30 μ long, irregularly branched. Hyphopodia alternate or unilateral, hemispheric, continuous, 9–11 μ diam., numerous. Conidia produced singly on short sterigmata arising from the upper surface of each cell of the repent conidiophores. Conidia ellipsoid, the ends more attenuate in the South African specimen, rounded in that from Uganda, 28–38 μ long, the central cells very much larger than the end cells and 15–20 μ wide, more strongly curved towards apex and base, the end cells pale brown, the central cells subopaque dark brown to chestnut, smooth (2)–3–(4)-septate. The central cells, one or two, have a dark outer wall which can be broken off leaving the inner wall concolorous with the other cells of the conidium.

166. **ENGLERULELLA** Hansford, gen. nov.

Mycelium superficiale ex hyphis brunneis hyphopodiatis compositum. *Setae* nullae. *Perithecia* superficialia in hyphis mycelii, subglobosa atrobrunnea glabra, in maturitate superne mucoso-diffluentia. *Asci* pauci aparaphysati 8-spori. *Sporae* brunneae · oblongae 1-septatae. Conidia (=*Oothecium* spp.) in pycnidiis efformata, continua, brunnea.

This genus, of which a preliminary account was given in Arq. Inst. biol. S. Paulo, XII, p. 238, 1941, is related to *Schiffnerula*, but differs entirely in the conidial stage; it differs from *Englerula* P. Henn. in its ectoparasitic habit, having hyphopodia and epidermal haustoria, which do not occur in *Englerula*, where the hyphae enter the stomata and form haustoria in the cells of the mesophyll.

Englerulella Davillae Hansf. in Arq. Inst. biol., S. Paulo, XII, p. 238, 1941, sine diagnosi latino.

Plagulae hypophyllae, densae, atrae, leves. *Mycelium* aereum ex hyphis atrobrunneis, 5 μ latis, rectis vel tenue flexuosis, septatis (15–30 μ), irregulariter ramosis compositum; mycelium immersum nullum. *Hyphopodia* alternata vel unilateralia, continua, hemisphaerica vel ovata, 8–15 × 8–10 μ. *Setae* nullae. *Haustoria* reniformia in cellulis epidermalibus singula ex hyphopodia producta. *Perithecia* sessilia, globosa vel depresso-obconica, opaca brunnea, glabra 100 μ diam., 80 μ alta. *Paries perithecii* numquam radiatus tandem in cellulas singulas intra mucum luteum vel brunneum natantes diffluens. *Asci* 6–15 fasciculati, ovato-elliptici sessiles, apice obtusi et ad 7 μ crassi, 8-spori, aparaphysati, 50 × 20–30 μ. *Sporae* oblongae, brunneae, 1-septatae, vix constrictae, leves, 18 × 8 μ; cellula apicalis aliquanto breviolet

latior. *Pycnidia* peritheciis similia, sed minutiora, ad 60 μ diam., in maturitate late aperta. *Paries pycnidii* strato externali unicellulari brunneo parenchymatico, strato internali conidiifero hyalino. *Conidia* pyriformia, atrobrunnea, centro zonula hyalina praedita, continua, levia, 14–18 × 6–8 μ, illis specierum multarum *Asterinae* fortiter similia.

Hab. in foliis *Davillae rugosae* ; Itaquora, Sao Paulo, Brazil ; S.C. Arruda, Julio, 1938 (Herb. Sec. Fitopat. Inst. Biol. Sao Paulo no. 2980—typus).

On *Davilla rugosa*, Brazil. The fungus forms dense black colonies up to 5 mm. diam. on the upper surface of the leaves, consisting of a mycelium of dark brown hyphae 5 μ wide, straight or slightly flexuous, septate (15–30 μ), irregularly branched. Hyphopodia alternate or

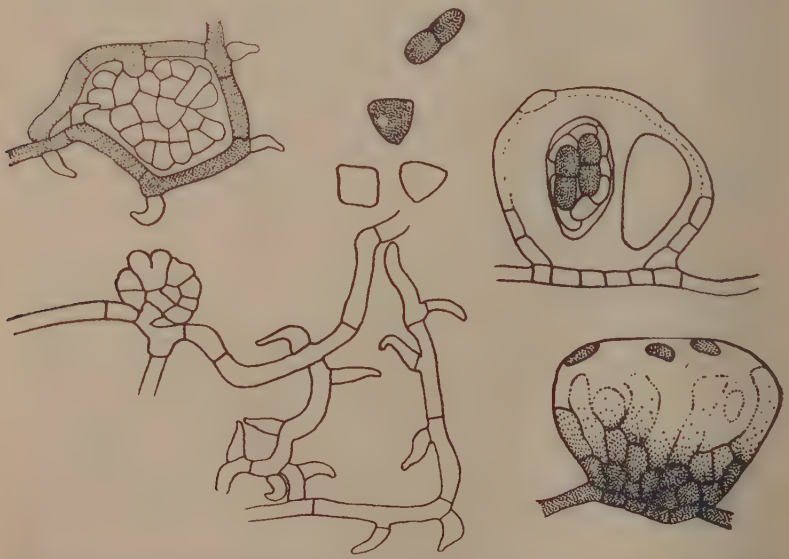

FIG. 4.—*Englerulella minima* :—Mycelium with hyphopodia ; perithecium in surface view and in optical section ; ascospore and conidia. All × 720.

unilateral, continuous, hemispheric to ovate, 8–15 × 8–10 μ. Setae none. Haustoria single in the epidermal cells, produced singly from the hyphopodia, reniform like those of many species of *Asterina*. Internal mycelium none. Both pycnidia and perithecia develop from small groups of cells lateral on the upper sides of the external hyphae ; these cells divide to form a hollow 1-layered sphere of parenchyma enclosing a delicate hyaline parenchymatous nucleus. As the perithecia ripen the wall cells separate and float on a mass of light yellowish to brown mucilage formed from the nuclear tissue ; there is no development of meridian hyphae. Perithecia sessile, globose to somewhat flattened obconic, opaque brown, glabrous. Asci 6–15, fasciculate, ovate-elliptic,

sessile, rounded and thickened (—7 μ) at the apex, 8-spored, aparaphysate, about 50×20–30 μ. Spores oblong, brown, 1-septate, scarcely constricted, smooth, about 18×8 μ, the upper cell shorter and wider than the lower. Pycnidia similar to the perithecia but rather smaller (60 μ diam., the perithecia 100 μ diam. by 80 μ high) and with rather less mucus formation, widely open at the apex when mature ; wall of one layer of brown parenchyma with an inner hyaline conidiiferous layer ; conidial formation continues after the opening of the pycnidium. Conidia piriform, dark brown with a middle hyaline zone, continuous, smooth, 14–18×6–8 μ, strongly resembling those of many species of *Asterina*. Neither perithecia nor pycnidia are radiate in structure at any stage.

167. **Englerulella minima** Hansford, sp. nov.

Plagulae hypophyllae effusae tenues atrae leves. *Mycelium* ex hyphis brunneis sinuosis 3 μ crassis, septatis (20–30 μ) ramosis anastomosantibus reticulatis compositum. *Hyphopodia* cylindracea vel conica, recta, sinuosa vel uncinata, alternata vel unilateralia, rarius subopposita, numerosa, circa 8 μ long. et 3–4 μ cr. *Haustoria* in cellulis epidermidis folii producta, minuta. *Perithecia* dispersa, in hyphis mycelii lateralia, sessilia obconica brunnea, 40–50 μ diam., 30 μ alt., glabra, superne mucoso-diffluentia. *Asci* 3–5, ovati, 8-spori, aparaphysati sessiles, 25×14 μ. *Sporae* brunneae ellipsoideae utrinque rotundatae, 1-septatae, vix constrictae, leves, 15×6 μ, cellula superiore lenissime crassiore ; in asco conglobatae. *Pycnidia* consimilia mucoso-diffluentia ; conidia tetraedrica brunnea levia circa 10 μ diam.

Hab. in foliis *Agelaeae ugandensis*, Mukono, Kiagwe, Uganda, *Hansford 2981* (typus) ; Entebbe Road, Uganda, *Hansford 3153*.

Both pycnidia and perithecia begin as indistinctly radiate flat plates of cells lateral on the hyphae ; the plate divides to form a 1-layered hollow sphere of dark cells enclosing a hyaline parenchymatous nucleus. Later the nucleus degenerates into mucus on which the separated cells of the upper part of the wall float as irregular dark fragments. The conidia are peculiar, being tetrahedral in shape with rounded subhyaline corners. (Fig. 4.)

168. **Englerulella ugandensis** Hansford, sp. nov.

Plagulae hypophyllae atrae effusae leves, rarius orbiculares, usque ad 10 mm. diam., saepe confluentes. *Mycelium* ex hyphis brunneis leniter undulatis 4–6 μ crassis, septatis, ramosis compositum. *Hyphopodia* alternata, 11–32 μ longa, cellula basali cylindracea 3–25 μ longa, cellula apicali curvata, 9–13×6–8 μ. *Setae* nullae. *Conidia=Oothecium stylosporum* (Cooke) Doidge. *Perithecia* laxe dispersa, superficialia sessilia, basi circa 50 μ lata, circa 120 μ alt. et sursum 100 μ diam., straminea vel deorsum dilute olivacea, obconica astoma, sursum glabra, deorsum hyphis radiantibus stramineis vel flavo-brunneis, irregulariter parceque ramosis, repentibus superficialibus, indistincte remoteque septatis, exhyphopodiatis circumdata. *Paries perithecii* unistratosus, ex cellulis angulosis 9 μ diam. et 3–5 μ cr. compositus, in maturitate superne mucoso-diffluens et cellulis secedentibus, intus muco hyalino impletus. *Asci* basales fasciculati aparaphysati, ellipsoidei vel saccati, 8-spori 60×30 μ,

sursum rotundati incrassati (—5 μ), basi breviter nodoso-stipitati. *Sporae* conglobatae, ellipsoideae vel oblongae, utrinque rotundatae, 1-septatae, leniter constrictae, 20–25 × 11–13 μ, leves, cellula superiore leniter crassiore, in maturitate olivaceae utrinque pallidiores, saepe in medio zona subhyalina praeditae.

Hab. in foliis *Tremae guineensis*, Kawanda, Kampala, Uganda, *Hansford 2957*. (Fig. 6.)

I am indebted to Mr. E. W. Mason for the elucidation of the habit of this fungus, which I had originally considered to be hyper-parasitic

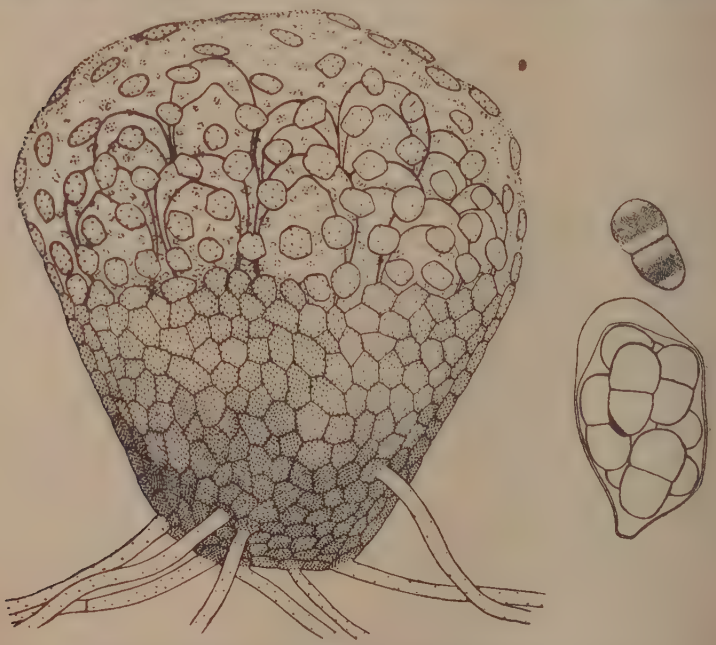

Fig. 5.—*Englerulella ugandensis* :—Perithecial stage. × 600.

on the *Oothecium* stage, which was described by Doidge in Bothalia, IV, p. 327, 1942, with synonomy *Asterina stylospora* Cooke and *Oothecium consimile* Syd. Only one mycelium is present in the Uganda specimen mentioned above, but the perithecia are surrounded by lighter-coloured exhyphopodiate hyphae originating from the lower cells of the perithecial wall and radiating outwards among the hyphopodiate mycelium. Mr. Mason informs me that the type specimen of *Oothecium stylosporum* in Herb. Kew. contains three perithecia of *Englerulella ugandensis*, but Cooke appears to have missed these. (Fig. 5.)

169. Dialacenium Hendrickxii Hansford, sp. nov.

Plagulae praecipue epiphyllae dispersae tenues atrae orbiculares leves,

usque ad 4 mm. diam. *Mycelium* ex hyphis dense reticulatis sinuosis brunneis, 6–8(9) μ crassis, septatis (cellulis 15–25 μ) irregulariter ramosis, radiantibus compositum. *Hyphopodia* numerosa, alternata vel unilateralia, plus minusve hemisphaerica, integra 8–12 × 11–14 μ. *Setae* nullae. *Conidia* nulla. *Perithecia* subglobosa sessilia olivacea glabra, usque ad 75 μ diam., numerosa, superficialia in hyphis mycelii; paries unistratosus parenchymaticus, dilute olivaceus vel subhyalinus, in maturitate superne mucoso-diffluens. *Asci* aparaphysati, 2–3, ovati vel subglobosi, sessiles, 8-spori, 30–35 μ diam. *Sporae* conglobatae brunneae, oblongae vel ellipsoideae utrinque rotundatae, 1-septatae, leniter constrictae, leves, 22–25 × 10–12 μ, cellula superiore leniter crassiore.

Hab. in foliis Euphorbiacearum spec. indet., Luiru, Kivu, Congo Belge, *F. L. Hendrickx 2243.*

The colonies are scattered, thin, black, circular, smooth, up to 4 mm. diam., mostly epiphyllous. Mycelium closely reticulate, of very sinuous, dark brown hyphae 6–8 μ wide with cells 15–25 μ long, the branching alternate or unilateral, rarely opposite, frequent. Hyphopodia numerous, usually one to each cell, alternate or unilateral, more or less hemispheric, entire, concolorous with the hyphae, usually near the distal end of the parent cell, 8–12 μ high by 11–14 μ wide. Setae and conidia none. Perithecia scattered, lateral on the hyphae, originating as small plates of cells about 30 μ diam. which divide to form hollow spheres of pale olivaceous parenchyma, 1-layered with nucleus of delicate small hyaline parenchyma. The nucleus later dissolves into mucus on which the remains of the wall cells float as dark fragments. There is no trace of blue colour as in *D. Cissi* Syd., but we regard this character as specific rather than of generic importance.

170. **Irene Vaccinii** Hansford, sp. nov. [*2201.6330.*]

Plagulae amphigenae orbiculares leves tenues atrae, usque ad 5 mm. diam. *Mycelium* ex hyphis laxe reticulatis, rectis vel flexuosis, 6–8 μ crassis (cellulis 25–35 μ longis) alternatim ramosis compositum. *Hyphopodia* capitata alternata, distantia, 25–32 μ longa; cellula basali subcylindracea 6–12 μ longa, cellula apicali subcylindracea vel clavata, saepe leniter irregularia vel sublobata et curvata, 16–22 × 9–12 μ. *Setae* nullae. *Perithecia* dispersa, globosa, usque ad 240 μ diam.; appendices 6–18, conicae curvatae, transverse striatulae, radiantes, usque ad 90 μ longae et basi ad 30 μ crassae, apice rotundatae saepe hamato-curvatae, membrana semi-translucenti. *Sporae* elongato-ellipsoideae, atrobrunneae utrinque obtusae, 3-septatae, constrictae, 55–63 × 16–18 μ.

Hab. in foliis *Vaccinii Stanleyi*, Mt. Biega, Kivu, Congo Belge, *F. L. Hendrickx 2088.*

171. **Irenopsis Caloncobae** Hansford, sp. nov. [*3301.4220.*]

Plagulae amphigenae tenues atrae leves, usque ad 8 mm. diam. *Mycelium* ex hyphis sinuosis atrobrunneis, 7–8 μ cr., (cellulis circa 30 μ longis) irregulariter ramosis, laxe reticulatis compositum. *Hyphopodia capitata* alternata, 20–30 μ longa, cellula basali 5–15 μ longa, cylindracea vel cuneata, cellula apicali rotundata vel subglobosa 15–20 × 14–18 μ. *Hyphopodia mucronata* dispersa ampullacea. *Setae myceliales* nullae.

Perithecia dispersa, globosa, atrobrunnea, usque ad 180 μ diam., superne setis 5–15 uncinatis atrobrunneis asperatis simplicibus usque ad 120 × 7–8 μ ornata. *Sporae* cylindraceae utrinque rotundatae, atrobrunneae 4-septatae, leniter constrictae, 38–44 × 15–17 μ.

Hab. in foliis *Caloncobae Welwitschii*, Bambesa, Uele, Congo Belge, *F. L. Hendrickx 858.*

172. **Irenopsis Colae** Hansford, sp. nov. [*3301 4220.*]

Plagulae hypophyllae tenues atrae effusae, usque ad 20 mm. diam. *Mycelium* ex hyphis atrobrunneis, rectis vel flexuosis, 7–8 μ cr. (cellulis 20–30 μ longis) irregulariter ramosis, laxe reticulatis compositum. *Hyphopodia mucronata* non visa. *Hyphopodia capitata* alternata, 20–30 μ longa, cellula basali cylindracea, 5–8 μ longa, cellula apicali rotundata, antrorsa vel retrorsa, 12–20 × 12–15 μ. *Setae* myceliales nullae. *Perithecia* dispersa globosa atra verrucosa, usque ad 180 μ diam., superne setis 10–15 uncinatis obtusis asperatis, usque ad 220 × 10 μ ornata. *Sporae* atrobrunneae, cylindraceae vel ellipsoideae utrinque rotundatae, 4-septatae, leniter constrictae, 37–43 × 15–17 μ.

Hab. in foliis *Colae* spec., Bambesa, Uele, Congo Belge, *F. L. Hendrickx 878.*

173. **Irenopsis Lagunae** Hansford, sp. nov. [*3301.3220.*]

Plagulae epiphyllae atrae tenues, usque ad 1 mm. diam. *Mycelium* ex hyphis atrobrunneis, undulatis, laxe reticulatis 6–7 μ crassis (cellulis 20–30 μ longis) irregulariter ramosis compositum. *Hyphopodia capitata* alternata vel unilateralia, 13–18 μ longa, cellula basali cylindracea 2–5 μ longa, cellula apicali subglobosa 10–12 μ diam. *Hyphopodia mucronata* dispersa ampullacea. *Setae* myceliales nullae. *Perithecia* in centro plagularum, pauca, globosa atra verrucosa, usque ad 140 μ diam., superne setis paucis simplicibus atrobrunneis obtusis minute asperatis, apicem versus helico-contortis ornata. Setae usque ad 100 × 6–8 μ. *Sporae* atrobrunneae cylindraceae utrinque rotundatae 4-septatae leniter constrictae, leves 36–39 × 12–15 μ.

Hab in foliis *Triumfettae semitrilobae*, Laguna, Philippine Is., Baker Fung. malay., 240 (typus in Herb. Pretoria, 9963).

174. **Irenopsis Scutiae** Hansford, sp. nov. [*2401.3220.*]

Plagulae amphigenae atrae tenues orbiculares, usque ad 9 mm. diam., vel confluentes. *Mycelium* ex hyphis atrobrunneis rectiusculis 6–8 μ crassis (cellulis 30–40 μ longis) reticulatis compositum. *Hyphopodia capitata* alternata, 18–25 μ longa, cellula basali cylindracea 5–8 μ longa, cellula apicali lobata reflexa 10–16 × 12–15 μ. *Hyphopodia mucronata* alternata vel opposita, ampullacea. *Setae* myceliales nullae. *Perithecia* dispersa, globosa atra, verrucosa, usque ad 150 μ diam.; cellulae parietis mamillatae vel in appendicem rectam vel uncinatam, obtusam, usque ad 40 μ longam productae. *Sporae* atrobrunneae cylindraceae utrinque rotundatae, 4-septatae, constrictae, 35–39 × 14–17 μ.

Hab. in foliis *Scutiae myrtinae*, Entebbe Road, Uganda, *Hansford 2602* (typus), *3429.*

175. **Irenina Bakeriana** Hansford, sp. nov. [*3101.4220.*]

Plagulae epiphyllae, rarius etiam hypophyllae, atrae tenues arachnoideae, usque ad 3 mm. diam. *Mycelium* ex hyphis rectiusculis vel undulatis, atrobrunneis laxe reticulatis, irregulariter ramosis, 7–9 μ crassis (cellulis 18–35 μ longis) compositum. *Hyphopodia capitata* alternata 25–33 μ longa, cellula basali cuneata, 5–11 μ longa, cellula apicali angulosa vel 2–3-lobata, rarius integra et globosa, 14–20 μ longa et 12–24 μ cr. *Hyphopodia mucronata* pauca, ampullacea, opposita vel alternata. *Setae* myceliales nullae. *Perithecia* dispersa globosa atra verrucosa, usque ad 160 μ diam., glabra. *Sporae* cylindraceae utrinque rotundatae, atrobrunneae 4-septatae leniter constrictae 39–43 × 14–16 μ.

Hab. in foliis *Fici urophyllae*, Singapore, Baker, Fung. malay. 455 (Typus in Herb. Pretoria, 12122).

Stevens in Ann. Myc., XXV, p. 456, placed this specimen as *I. reticulata* (Karst. & Roum.) Stev., but on p. 427 he stated that *Meliola reticulata* Karst. & Roum. was a synonym of *Irene tonkinensis* (Karst. & Roum.) Stev. The specimen quoted above is parasitised by *Helminthosporium capense* Thuem.

176. **Irenina callista** (Rehm) Hansford, comb. nov. [*3101.4220.*]

Syn. *Meliola callista* Rehm in Leafl. Phil. Bot., VI, p. 2191, 1914.

Epiphyllous, circular, arachnoid colonies 8–10 mm. diam., or confluent. Hyphae little branched, 5–6 μ wide, cells 20–30 μ long, flexuous, dark brown. Capitate hyphopodia alternate 20–30 μ long, basal cell cylindric to cuneate, 5–13 μ long, head cell entire rounded, clavate to subglobose, often antrorse, 14–18 × 10–12 μ. Mucronate hyphopodia opposite or alternate, scattered, ampulliform. No mycelial setae ; the numerous conidiophores of *Helminthosporium capense* Thuem. were previously regarded as the mycelial setae of this species. Perithecia crowded in the centre of the colony, black, globose, verrucose, glabrous, up to 200 μ diam. Spores dark brown, ellipsoid with rounded ends, 4-septate, slightly constricted, 37–40 × 16–19 μ.

On *Premna odorata*, Los Banos, Philippines, Baker, Fung. malay. 41.

177. **Irenina iquitosensis** (P. Henn.) Hansford, comb. nov. [*3101.4220.*]

Syn. *Meliola iquitosensis* P. Henn. in Hedw., XLIII, p. 361.
Meliolinopsis iquitosensis (P. Henn.) Beeli.
Meliolina iquitosensis (P. Henn.) Stevens.

Colonies epiphyllous, orbicular or confluent, black, dense, subcrustose. Hyphae dark brown, substraight to flexuous, 8–9 μ wide, the cells 15–25 μ long, densely reticulate, irregularly branched. Capitate hyphopodia alternate or unilateral, 20–29 μ long, antrorse, stalk cell cylindric, 5–9 μ long, head cell cylindric, entire, rounded or subtruncate above, 14–20 × 11–14 μ. Mucronate hyphopodia scattered, ampulliform, opposite or unilateral. Mycelial setae none ; those given in previous accounts are the conidiophores of *Helminthosporium capense* Thuem., by which all the colonies seen are parasitised as well as by *Phaeophragmeriella meliolicola*, of which the asci and spores were given in Hennings' diagnosis. Perithecia scattered or crowded towards the centre, black, globose,

verrucose, glabrous, up to 180 μ diam. Asci 2-spored, evanescent. Spores ellipsoid with rounded ends, dark brown, 4-septate, slightly constricted, smooth 41–48 × 17–19 μ.

On *Bactris* sp., Iquito, Amazon, Ule, Mycoth. brasil. 58 in Herb. Pretoria.

178. **Irenina Leucosykeae** (Yates) Hansford, comb. nov. [*3101.4230.*]

Syn. *Meliola Leucosykeae* Yates in Philipp. Journ. Sci., XII, p. 366, 1917.

Colonies epiphyllous orbicular black, 4–8 mm. diam., thin. Mycelium of dark brown flexuous hyphae, irregularly branched and loosely reticulate, 6–8 μ wide, the cells 20–30 μ long. Capitate hyphopodia alternate, 16–24 μ long, stalk cell cylindric to cuneate, 4–10 μ long, head cell clavate to subglobose, sometimes slightly angular, rarely sublobate, 12–16 μ long by 10–18 μ wide. Mucronate hyphopodia few, scattered, opposite or alternate, ampulliform. Mycelial setae none. Perithecia scattered, globose black verrucose 220–260 μ diam., glabrous. Asci 2-spored, evanescent. Spores dark brown, cylindri with rounded ends, 4-septate, smooth, slightly constricted 35–40 × 13–16 μ.

On *Leucosyke*, Philippines, Philipp. Bur. Sci. 24621 in Herb. Pretoria (13614). Yates included the conidiophores of *Helminthosporium capense* Thuem. and the asci of *Phaeophragmeriella* sp. in his account ; the Herb. Pretoria specimen does not show the latter parasite.

179. **Irenina manaosensis** (P. Henn.) Hansford, comb. nov. [*2101.4220.*]

Syn. *Meliola manaosensis* P. Henn. in Hedw., XLIII, p. 366, 1904.
Meliolinopsis manaosensis (P. Henn.) Beeli.

The specimen Ule, Mycoth. brasil. 59 on *Mauritia*, Manaos, Brazil, in Herb. Pretoria, shows the *Irenina* parasitized by *Helminthosporium capense* Thuem. and by *Arthrobotryum melanoplaca* B. & C. ; no perithecial parasite was found, though the perithecia, asci and spores described by Hennings are undoubtedly those of *Phaeophragmeriella meliolocola* (Syd.) Hansford.

Colonies epiphyllous, up to 10 mm. diam., black, orbicular dense and crustose (Hennings gave them as hypophyllous). Hyphae dark brown, undulating to sinuous, irregularly branched and densely reticulate, 7–9 μ wide, cells 30–40 μ long. Capitate hyphopodia alternate, 26–34 μ long, stalk cell cylindric 7–14 μ long, head cell irregularly angular to sublobate, variable in shape, 20–28 × 15–22 μ. Mycelial setae none. Perithecia scattered black, verrucose, globose, up to 160 μ diam. Spores dark brown, cylindric with rounded ends, 3-septate, slightly constricted, 35–41 × 11–14 μ ; asci 2-spored, evanescent.

180. **Irenina umirayensis** (Yates) Hansford, comb. nov. [*3101.4220.*]

Syn. *Meliola umirayensis* Yates in Phil. Journ. Sci., XIII, p. 370, 1918.

Epiphyllous, rarely also hypophyllous, orbicular colonies 4–10 mm. diam. or confluent. Hyphae dark brown, flexuous to sinuous, 6–8 μ wide, cells 24–35 μ long, branching irregular forming rather loose reticulum. Capitate hyphopodia alternate, 25–40 μ long, stalk cell cylindric 8–20 μ

long, head cell irregularly and shallowly sinuous-lobate, 14–22×11–18 μ. Mucronate hyphopodia not seen. Mycelial setae none. Perithecia few, scattered, up to 150 μ diam., globose, black, verrucose. Asci 2-spored evanescent. Spores dark brown, cylindric with broadly rounded ends, 4-septate, slightly constricted, 36–41×14–16 μ. On *Ficus* sp., Philipp. Bur. Sci. 29081, in Herb. Pretoria.

Yates included the spores of *Phaeophragmeriella meliolicola* (Syd.) Hansford in his diagnosis.

181. **Irenina cryptocarpa** (Ell. & Mart.) Hansford, comb. nov. [*3101.4220.*]

Syn. *Meliola cryptocarpa* Ell. & Mart. in Amer. Natur., XVII, p. 1284, 1883.

The following re-description is drawn up from a specimen in Herb. Pretoria, leg. and det. Ellis, on *Gordonia*, Florida, ex Farlow Herb., ex Herb. Ellis :—

Colonies epiphyllous, dense, black, smooth, 1–3 mm. diam. Mycelium of dark brown hyphae, oppositely branched and anastomosing, 8–10 μ wide, the cells 10–12 μ long, forming almost a solid plate. Capitate hyphopodia very crowded, alternate, 15–22 μ long, stalk cell short cylindric 3–7 μ long, head cell globose to ovate or clavate, 12–15 μ diam. or up to 16 μ long. Mucronate hyphopodia not seen. Mycelial setae none. Peritbecia not seen (Ell. & Mart. give them as black, subglobose, 180–200 μ diam., collapsing). Spores dark brown, 4-septate, cylindric with rounded ends, to somewhat ellipsoid, slightly constricted, 40–44×16–17 μ.

182. **Irenina Lovoae** Hansford, sp. nov. [*3101.4220.*]

Plagulae amphigenae tenues orbiculares atrae, usque ad 5 mm. diam. *Mycelium* ex hyphis atrobrunneis, leniter sinuosis 7–8 μ crassis (cellulis 25–40 μ longis) irregulariter ramosis et laxe reticulatis compositum. *Hyphopodia capitata* alternata vel unilateralia, 20–25 μ longa, suberecta, cellula basali cylindracea 3–7 μ longa, recta vel curvula, cellula apicali cylindracea vel lenissime irregulariter ovata, 18–20×8–11 μ. *Setae myceliales* nullae. *Hyphopodia mucronata* dispersa, opposita vel alternata, ampullacea. *Perithecia* dispersa, globosa, atra, verrucosa, usque ad 170 μ diam., basi hyphis radiantibus exhyphopodiatis circumdata. *Asci* 2-spori, evanescentes. *Sporae* atrobrunneae, cylindraceae utrinque rotundatae, 4-septatae, constrictae, 38–44×14–18 μ.

Hab. in foliis *Lovoae Brownii*, Entebbe Road, Uganda, *Hansford 2914* (typus), *2995*, *3493* ; in foliis *Trichiliae* spec., Uganda, *Hansford 3018*.

183. **Irenina Entandrophragmae** Hansf., sp. nov. [*3101.4220.*]

Plagulae amphigenae, plerumque epiphyllae, irregulares 1–8 mm. diam. tenues, atrae. *Mycelium* ex hyphis atrobrunneis subrectis, 7 μ crassis (cellulis 20–40 μ longis) opposite ramosis, (60–90°) laxe reticulatis compositum. *Hyphopodia capitata* alternata, 22–30 μ longa, cellula basali circa 7 μ longa, cuneata, antrorsa, cellula apicali clavata, integra vel sub-2–3-lobata, 15–19×12–16 μ. *Hyphopodia mucronata* in hyphis distinctis evoluta, opposita vel alternata, conoidea vel ampullacea,

15–18 × 6–7 μ. *Setae myceliales* nullae. *Perithecia* dispersa, atra, globosa, verrucosa, 100–140 μ diam., cellulis parietis rotundato-conicis. *Asci* evanescentes. *Sporae* atrobrunneae, cylindraceae utrinque rotundatae, 4-septatae, leniter constrictae, 40–47 × 15–18 μ.

Hab. in foliis *Entandrophragmae* spec., Kiterera, Busoga, Uganda, *Hansford 2830*.

This was previously included under *I. glabroides* Stev. in Contribution No. VI of the present series, but we now regard this species as of composite nature, from which the forms parasitic on widely separated host families must be segregated out.

184. **Irenina hyptidicola** Stev. var. indet. [*3102.3220.*]

On *Coleus barbatus*, Entebbe Road, Uganda, *Hansford 3393*, *1357*, *3023*, *Dummer 2343* ; on unknown Labiate, *Dummer 2360*.

Colonies minute, epiphyllous, black, smooth, scarcely visible unless numerous and confluent. Mycelium of crooked dark brown hyphae 6–7 μ wide, the cells mostly 12–25 μ long, branching alternate or opposite, forming a loose network. Capitate hyphopodia alternate, 14–20 μ long, stalk cell cylindric 3–7 μ, head cell entire, subglobose, 10–13 μ diam. Mucronate hyphopodia rather few, towards the centre of the colony, scattered or on separate hyphae, opposite or alternate, narrow ampulliform with short attenuate neck, 15–18 × 6–8 μ. Setae none. Perithecia usually in a loose central group, sometimes more scattered, black, globose, verrucose, up to 150 μ diam., the surface cells scarcely prominent, rounded-conic. Spores dark brown, cylindric with rounded ends, 4-septate, constricted, 31–36 × 12–14 μ.

Ex descr. this is close to var. *wombalensis* Beeli, but specimens of this have not been available for comparison.

185. **Irenina harunganicola** Hansford, sp. nov. [*3102.4220.*]

Plagulae epiphyllae, tenuissimae leves atrae, usque ad 1 mm. diam. *Mycelium* ex hyphis atrobrunneis 5–6 μ cr. (cellulis plerumque circa 20 μ longis) opposite ramosis (45–60°) subrectis laxe reticulatis compositum. *Hyphopodia capitata* opposita, raro alternata, leniter antrorsa, recta, 12–18 μ longa, cellula basali cylindracea, 3–6 μ longa, cellula apicali cylindracco-clavata, raro subglobosa, integra, 8–12 × 7–9 μ. *Hyphopodia mucronata* pauca, dispersa, ampullacea circa 20 × 6–9 μ. *Setae myceliales* nullae. *Perithecia* dispersa, atra, globosa, usque ad 140 μ diam., cellulis parietis obtuse conoideis, usque ad 10 μ lat. *Sporae* atrobrunneae, cylindraceae utrinque rotundatae, 4-septatae, constrictae, 32–40 × 13–15 μ.

Hab. in foliis *Harunganae madagascariensis*, Entebbe Road, Uganda, *Hansford 3349* (inter plagulae *Ireninae Harunganae* Hansford).

The mycelial characters and the very thin colonies separate this easily from *I. Harunganae*, with which it usually occurs.

186. **Irenina Strombosiae** Hansford, sp. nov. [*2101.4230.*]

Plagulae epiphyllae atrae minutae, usque ad 1 mm. diam., densae. *Mycelium* ex hyphis atrobrunneis rectiusculis 7–9 μ cr., (cellulis 20–50 μ longis) reticulatis compositum. *Hyphopodia capitata* alternata 24–32 μ longa, cellula basali cylindracea 5–12 μ longa, cellula apicali irregulariter

lobata 12–22 × 10–20 μ. *Hyphopodia mucronata* opposita vel alternata, haud numerosa, lageniformia. *Setae myceliales* nullae. *Perithecia* in centro plagularum aggregata, atra, globosa, usque ad 280 μ diam.; cellulae parietis in appendicem uncinatam usque ad 40 μ long. attenuatae. *Sporae* atrobrunneae ellipdoideae 3-septatae constrictae 39–45 × 15–20 μ.

Hab. in foliis *Strombosiae Scheffleri*, *Hansford 2623*, ex *Eggeling 3096* in the phanerogamic herbarium, Uganda.

This species is intermediate between *Irene* and *Irenina*, with the surface cells of the perithecium elongated into short broad appendages, though these are not typically transversely striate as in some species of *Irene*.

187. Irenina Acalyphae Stev. & Rold. in Philipp. Journ. Sci., LVI, p. 51, 1935. [*3103.4220.*]

Syn. *Meliola Acalyphae* Rehm in Philipp. Journ. Sci., VIII, p. 252, 1913. *Amazonia Acalyphae* (Rehm) Theiss.

Colonies amphigenous, small, scattered, dense, black, smooth, 0·5–1·5 mm. diam., rarely confluent, numerous. Mycelium of dark brown sub-straight hyphae 7–10 μ wide, the cells mostly about 10–12 μ long, branching frequent at 60–90° to form with the hyphopodia almost a solid plate. Capitate hyphopodia opposite or towards the centre, many unilateral or alternate, very densely crowded, 15–20 μ long; stalk cell cylindric 2–5 × 7–10 μ; head cell subglobose, or somewhat angular through crowding, 11–15 × 9–13 μ. Mucronate hyphopodia on few hyphae, mixed with capitate, ampulliform with bent neck, 15–20 × 6–10 μ. Setae none. Perithecia scattered, originating as radiate plates of cells up to 120 μ diam., lateral on the hyphae and frequent towards the edges of the colonies, becoming raised in the centre and eventually globose or slightly flattened, with parenchymatous, not radiate, upper wall and at maturity surrounded at the base by the remains of the edge of the original disc, up to 160 μ diam., black, verrucose, the surface cells conoid to mamillate, about 25 μ diam. and up to 15 μ high. Spores oblong to ellipsoid with rounded ends, dark brown, 4-septate, constricted, 37–44 × 15–19 μ (average of 100, 40·3 × 16·9 μ). The spore size was given by Rehm as 30–35 × 12–14 μ; he must either have had immature spores or those of another *Meliola*. The description above is drawn up from the specimen *Baker 483*, on *Acalypha stipulacea*; Philippines, in Herb. Peradeniya, sub *Meliola Acalyphae* Rehm, apparently part of the type collection; it corresponds closely to that of *I. Acalyphae* Stev. & Rold., which we suspect to be identical with Rehm's species, which was wrongly referred to *Amazonia* by Theissen.

188. **Irenina Erythrococcae** Hansford, sp. n. [*3104.3220.*]

Plagulae epiphyllae, raro hypophyllae, atrae, tenues, 0·2–1·0 mm. diam., leves, saepius conidiophoris *Helminthosporii dorycarpi* Mont. velatae. *Mycelium* ex hyphis atrobrunneis subrectis vel leniter flexuosis 5–6 μ crassis (cellulis 20–30 μ longis) opposite vel irregulariter ramosis, laxe reticulatis compositum. *Hyphopodia capitata* alternata, 12–20 μ longa, cellula basali cylindracea 4–7 μ longa, cellula apicali clavata

integra vel angulosa vel sub-2–3-lobata, 8–13 × 7–12 μ. *Hyphopodia mucronata* pauca, dispersa, plerumque alternata, conoidea vel breviter ampullacea, 12–15 × 7–8 μ. *Setae* nullae. *Perithecia* dispersa, globosa, atra, verrucosa, usque ad 140 μ diam., cellulis parietis conoideis vel sub-mammillatis, circa 25 μ diam. et 10 μ alt. *Sporae* atrobrunneae, cylindraceae vel subellipsoideae utrinque rotundatae, 4-septatae, constrictae, 32–38 × 12–15 μ (av. 35·1 × 14·0 μ).

Hab. in foliis *Erythrococcae rigidifoliae*, Entebbe Road, Uganda, *Hansford 3411* (typus), *2328*.

Each perithecium begins as a solid disc of more or less radiate hyphae, later enlarging in the centre and becoming globose, finally surrounded by short radiating hyphopodiate hyphae at the base.

189. **Irenina pipericola** Hansford, sp. nov. [*3101.4220*.]

Plagulae epiphyllae et caulicolae, atrae, densae, circa 0·5 mm. diam., leves. *Mycelium* ex hyphis subrectis atrobrunneis 7–8 μ crassis (cellulis 17–35 μ longis) alternatim, raro opposite ramosis (45–60°), dense reticulatis compositum. *Hyphopodia capitata* alternata, antrorsa, 23–40 μ longa, cellula apicali fortiter 3–5-lobata, 18–26 × 12–24 μ. *Hyphopodia mucronata* non visa. Setae nullae. *Perithecia* saepius singula in centro plagularum, atra, globosa, 140–190 μ diam., cellulis conicis, circa 25–30 μ diam. et usque ad 15 μ alt. *Asci* 2-spori, evanescentes. *Sporae* atrobrunneae, cylindraceae vel ellipsoideae utrinque rotundatae, 4-septatae, constrictae, 44–52 × 16–20 μ.

Hab. in foliis *Piperis guineensis*, Uganda, *Hansford 1990* (typus), *1938*, *2663*, *3348* ; in foliis *P. capensis*, Uganda, *Hansford 3035*.

In my former lists of Uganda Meliolineae, this was given as *Irenina atra* (Doidge) Stev., but in view of the wide separation of the respective hosts, it is now considered preferable to erect a new species for the present fungus.

190. **Irenina Nuxiae** (Syd.) Hansford, comb. nov. [*3101.4330*.]

Syn. *Irene Nuxiae* Syd. in Bothalia, II, p. 433, 1928.

On *Nuxia* (*Lachnopylis*) *congesta*, Mt. Biega, Kivu, Congo Belge, *F. L. Hendrickx 2095*.

The mammillate surface cells of the perithecium with short curved apices are very similar to those of *I. Strombosiae*; and somewhat intermediate between the conoid cells of *Irenina* and the " larviform appendages " of *Irene* ; on the whole the affinity is with the former genus.

191. **Meliola agelaeicola** Hansford, sp. nov. [*3141.4221*.]

Plagulae hypophyllae atrae orbiculares, usque ad 6 mm. diam., velutinae, densae. *Mycelium* ex hyphis atrobrunneis sinuosissimis nodosis 7–9 μ (cellulis 20–30 μ longis) irregulariter ramosis, dense reticulatis compositum. *Hyphopodia capitata* alternata 20–35 μ longa, cellula basali breviter cylindracea, cellula apicali subglobosa ovata cylindracea vel angulosa, recta vel curvata, haud lobata, 18–28 × 10–16 μ. *Hyphopodia mucronata* dispersa alternata lageniformia. *Setae myceliales* numerosae erectae opace atrae, usque ad 270 μ longae, basi 10–12 μ cr., 1–2-dichotomodivisae vel 3-furcatae, ramis –50 μ, ramulis –20 μ longis, apice 2–4-dentatis,

ramis late divergentibus. *Perithecia* dispersa globosa atra verrucosa, usque ad 160 μ diam., glabra. *Sporae* cylindraceae utrinque rotundatae, 4-septatae, leniter constrictae, atrobrunneae leves 45–49 × 16–18 μ.

Hab. in foliis *Agelaeae ugandensis*, Mukono, Kiagwe, Uganda, *Hansford 2979* (typus), *3044*.

The head cells of the capitate hyphopodia are very variable in shape, but are never lobate ; the mycelial hyphae are very sinuous and in places nodose-bent.

192. **Meliola brideliicola** Hansford, sp. nov. [*3111.4221*.]

Plagulae hypophyllae atrae orbiculares velutinae, usque ad 8 mm. diam. *Mycelium* ex hyphis atrobrunneis sinuosis 5–8 μ cr. (cellulis 20–40 μ longis) irregulariter ramosis dense reticulatis compositum. *Hyphopodia capitata* haud numerosa, alternata vel unilateralia, 18–35 μ longa, cellula basali cylindracea 5–20 μ longa, cellula apicali cylindraceo-clavata vel curvata, rarius sublobata, 10–20 × 6–10 μ. *Hyphopodia mucronata* numerosa, opposita vel alternata, lageniformia. *Setae myceliales* numerosae erectae rectae simplices, usque ad 300 × 6–7 μ, apice obtusae. Perithecia dispersa globosa atra verrucosa usque ad 150 μ diam. *Sporae* atrobrunneae cylindraceae utrinque rotundatae vel subconicae, 4-septatae constrictae 41–47 × 12–15 μ.

Hab. in foliis *Brideliae micranthae*, Gayaza Road, Uganda, *Hansford 2639* (typus), *2800*, *3033*, *3183*.

The capitate hyphopodia are very variable and often resemble short branches of the hyphae.

193. **Meliola Carpolobiae** Hansford, sp. nov. [*3112.4221*.]

Plagulae amphigenae orbiculares 1–2 mm. diam., atrae. *Mycelium* ex hyphis atrobrunneis rectiusculis 7–9 μ crassis (cellulis 15–25 μ longis) reticulatis ramosis compositum. *Hyphopodia capitata* opposita, 15–22 μ longa, cellula basali recta cylindracea 3–5 μ longa, cellula apicali cylindracea vel clavata 12–16 × 9–12 μ. *Hyphopodia mucronata* numerosa, inter hyphopodia capitata interspersa, opposita ampullacea. *Setae myceliales* numerosae rectae atrae simplices 150–300 × 7–9 μ, apice obtusae. *Perithecia* in centro plagularum aggregata, atra globosa verrucosa 130–170 μ diam., glabra. *Sporae* atrobrunneae, oblongo-cylindraceae utrinque rotundatae, 4-septatae constrictae 38–43 × 17–19 μ.

Hab. in foliis *Carpolobiae albae*, Entebbe, *Hansford 2567* (typus, ex *Maitland 273* in the phanerogamic herbarium, Uganda), Kawanda, Uganda, *Hansford 3345*.

194. **Meliola Chlorophorae** Hansford, sp. nov. [*3133.4221*.]

Plagulae epiphyllae atrae orbiculares velutinae densae, usque ad 8 mm. diam. *Mycelium* ex hyphis atrobrunneis subrectis 6–8 μ crassis (cellulis 20–40 μ longis) opposite ramosis reticulatis compositum. *Hyphopodia capitata* opposita vel alternata, 12–18 μ longa, cellula basali cylindracea 3–6 μ longa, cellula apicali subglobosa vel late ovata 10–14 × 10–12 μ. *Setae myceliales* numerosae erectae rectae opacae, usque ad 260 μ long., basi 6–8 μ cr., apice cristato-dentatae (–10 μ). *Perithecia* dispersa atra

globosa verrucosa, usque ad 160 μ diam. *Sporae* atrobrunneae cylindraceae utrinque rotundatae 4-septatae, leniter constrictae 39–44 × 13–16 μ.

Hab. in foliis *Chlorophorae excelsae*, Kiterera, Busoga, Uganda, *Hansford 2824* (typus), *3147*.

195. **Meliola Daviesii** Hansford, sp. nov. [*3111.3222.*]

Plagulae epiphyllae atrae orbiculares, usque ad 2 mm. diam. *Mycelium* ex hyphis atrobrunneis sinuosis, 7–8 μ cr. (cellulis 20–30 μ longis) opposite ramosis reticulatis compositum. *Hyphopodia capitata* alternata, saepe curvata 20–30 μ longa, cellula basali subcylindracea 5–12 μ longa, cellula apicali cylindracea curvula 12–20 × 9–11 μ. *Hyphopodia mucronata* opposita ampullacea. *Setae myceliales* plerumque juxta perithecia evolutae, haud numerosae, erectae rectae opacae simplices acutae, usque ad 400 × 7–9 μ. *Perithecia* dispersa globosa atra verrucosa, usque ad 140 μ diam., glabra. *Sporae* atrobrunneae cylindraceae utrinque rotundatae, 4-septatae leves, leniter constrictae, 38–41 × 14–17 μ.

Hab. in foliis *Jasmini* spec., Kiterera, Busoga, Uganda, *Hansford 2814* p.p. (typus), *2836*, *3201* (spec. orig. leg. *D. M. Davies*).

196. Meliola gemellipoda Doidge in Bothalia, I, p. 80, 1921.

On *Jasminum* spp., Uganda, *Hansford 2814*, *2836*, *3247*, *3305* ; in most collections mixed with *M. Daviesii* and with *Asterina erysiphoides*. The collections differ somewhat from the description given by Doidge : the setae reach 700 μ and are 10–12 μ thick at the base, while the spores are 45–58 × 19–22 μ. It is close to *M. busogensis* Hansf., but the latter has constantly shorter spores, below 50 μ.

197. **Meliola Hendrickxii** Hansford, sp. nov. [*3111.5321.*]

Plagulae epiphyllae atrae densae, usque ad 5 mm. diam. *Mycelium* ex hyphis atrobrunneis 8–10 μ cr. (cellulis circa 20 μ longis) opposite ramosis, densissime intertextis compositum. *Hyphopodia capitata* alternata 22–30 μ longa, cellula basali cylindracea 5–7 μ longa, cellula apicali clavata vel irregulari 17–23 × 15–20 μ. *Hyphopodia mucronata* in hyphis distinctis evoluta, opposite, ampullacea. *Setae myceliales* paucae, erectae subopacae, rectae vel curvulae, simplices obtusae, usque ad 200 × 9–11 μ. *Perithecia* dispersa globosa atra verrucosa glabra, usque ad 170 μ diam. *Sporae* atrobrunneae, cylindraceae utrinque rotundatae, 4-septatae, leniter constrictae, 48–52 × 18–22 μ.

Hab. in foliis *Alstoniae congensis*, Bambesa, Uele, Congo Belge, *F. L. Hendrickx 716*.

The colonies consist of almost a solid plate of hyphae and hyphopodia ; each perithecium is sessile on a radiate disc of exhyphopodiate hyphae.

198. Meliola leptidea Syd. var. **major** Hansford, var. nov. [*3143.6331.*]

A typo ita differt : Sporae majores 55–61 × 19–23 μ.

Hab. in foliis *Schefflerae* spec., Kivu, Congo Belge, *F. L. Hendrickx 2091*.

199. **Meliola litseicola** Hansford, sp. nov. [*2111.5222.*]

Plagulae epiphyllae atrae orbiculares, usque ad 5 mm. diam. vel

confluentes. *Mycelium* ex hyphis dense reticulatis, atrobrunneis, rectiusculis vel leniter undulatis, opposite ramosis, 7–8 μ crassis (cellulis 20–40 μ longis) compositum. *Hyphopodia capitata* numerosa alternata vel unilateralia 26–38 μ longa, cellula basali cylindracea, saepe curvata, 7–15 μ longa, cellula apicali angulosa vel lobata, saepe sinuosa 17–22 $\times$ 11–20 μ. *Hyphopodia mucronata* pauca dispersa ampullacea. *Setae myceliales* numerosae erectae rectae subopacae simplices acutae 250–420 $\times$ 7–9 μ, rarius hamatae. *Perithecia* dispersa atra globosa verrucosa glabra, usque ad 140 μ diam. *Sporae* ellipsoideae utrinque rotundata, atrobrunneae 3-septatae constrictae 50–55 $\times$ 18–20 μ.

Hab. in foliis *Litseae* spec., Mt. Maquiling, Philippines, *Baker 42* (typus in Herb. Pretoria 9337).

All spores found in this specimen were 3-septate ; only very occasional setae are bent to hamate at the tips.

200. **Meliola mabirensis** Hansford, sp. nov. [*3131.4223.*]

Plagulae hypophyllae orbiculares atrae tenues, usque ad 3 mm. diam. *Mycelium* ex hyphis atrobrunneis sinuosissimis vel geniculatis, 6–8 μ crassis (cellulis 25–40 μ longis) opposite ramosis laxe reticulatis compositum. *Hyphopodia capitata* alternata distantia curvata 25–35 μ longa, cellula apicali clavata vel truncato-cylindracea, saepe curvata 18–25 $\times$ 11–14 μ. *Hyphopodia mucronata* dispersa, plerumque alternata vel unilateralia, ampullacea *Setae myceliales* praecipue juxta perithecia evolutae, paucae, erectae subopacae, usque ad 640 $\times$ 7–9 μ, apice 2–4-dentatae (–7 μ) rarius simplices acutae. *Perithecia* dispersa atra globosa verrucosa, usque ad 180 μ diam. *Sporae* atrobrunneae cylindraceae utrinque rotundatae, 4-septatae leniter constrictae 45–49 $\times$ 13–16 μ.

Hab. in foliis *Agelaeae ugandensis*, Mukono, Kiagwe, Uganda, *Hansford 3046* (typus), *3379*.

201. **Meliola Maitlandii** Hansford, sp. nov. [*311/33.4221.*]

Plagulae epiphyllae rarissime amphigenae, orbiculares atrae tenues. *Mycelium* ex hyphis atrobrunneis rectis 5–7 μ cr. (cellulis 25–40 μ longis) opposite ramosis reticulatis compositum. *Hyphopodia capitata* opposita vel alternata, distantia, 14–18 μ longa, cellula basali cylindracea 3–5 μ longa, cellula apicali subglobosa 10–14 $\times$ 9–11 μ. *Hyphopodia mucronata* lageniformia. *Setae myceliales* numerosae erectae rectae, apice obtusae, acutae vel 2-dentatae (–10 μ), usque ad 280 $\times$ 6–8 μ. *Perithecia* dispersa atra globosa verrucosa, usque ad 170 μ diam. *Sporae* cylindraceae utrinque rotundatae, atrobrunneae 4-septatae constrictae 30–43 $\times$ 13–15 μ.

Hab. in foliis *Popowiae Maitlandii*, Gayaza Road, Uganda, *Hansford 2640*.

202. **Meliola Mammeae** Hansford, sp. nov. [*3111.5323.*]

Plagulae amphigenae atrae orbiculares arachnoideae tenues. *Mycelium* ex hyphis atrobrunneis rectis, 7–8 μ cr. (cellulis 30–55 μ longis) opposite ramosis laxe reticulatis compositum. *Hyphopodia capitata* alternata distantia, 20–29 μ longa ; cellula basali cylindracea 5–8 μ longa, cellula apicali cylindracea vel elongato-clavulata 15–20 $\times$ 10–12 μ. *Setae myceliales* numerosae erectae rectae subopacae simplices plerumque obtusae,

rarius subacutae, usque ad 1000×7–10 μ. *Perithecia* dispersa globosa atra verrucosa glabra, usque ad 150 μ diam. *Sporae* atrobrunneae cylindraceae utrinque rotundatae, 4-septatae constrictae 45–53×18–22 μ.

Hab. in foliis *Mammeae* spec., San Domingo, Ciferri, Mycofl. doming. 169 (in Herb. Pretoria).

Ciferri referred this to *M. Garciniae* Yates, which has crustose, very dense, epiphyllous colonies, different hyphopodia and larger perithecia. The mycelium of the present fungus is characteristic, with the straight hyphae oppositely branched at about 45° and the capitate hyphopodia parallel to the branches. The spores of the Pretoria specimen are longer than those given by Ciferri ("42–48×18–22 μ").

203. **Meliola Marantochloae** Hansford, sp. nov. [*3143.3221.*]

Plagulae hypophyllae tenues orbiculares atrae velutinae usque ad 20 mm. diam. vel confluentes. *Mycelium* ex hyphis atrobrunneis sinuosis 6–8 μ cr. (cellulis 20–45 μ longis) opposite ramosis reticulatis compositum. *Hyphopodia capitata* alternata vel opposita, 14–18 μ longa; cellula basali cylindracea 4–8 μ longa, cellula apicali clavata vel curvula, integra 9–13×8–11 μ. *Hyphopodia mucronata* dispersa opposita vel alternata, lageniformia. *Setae myceliales* dispersae numerosae erectae opacae rectae, usque ad 240×7–9 μ, apice 1–3-dichotomae, ramis –35 μ, ramulis –10 μ longis. *Perithecia* dispersa globosa atra verrucosa glabra usque ad 160 μ diam. *Sporae* atrobrunneae cylindraceae utrinque rotundatae, 4-septatae leniter constrictae 34–38×11–13 μ.

Hab. in foliis *Marantochloae* spec., Kiterera, Busoga, Uganda, *Hansford 2826* (typus); Mukono, Kiagwe, Uganda, *Hansford 2958*.

204. **Meliola micropoda** Hansford, sp. nov. [*3133.3223.*]

Plagulae epiphyllae tenues orbiculares, usque ad 6 mm. diam., vel confluentes, atrae velutinae. *Mycelium* ex hyphis atrobrunneis rectis vel flexuosis, 5–7 μ cr. (cellulis 20–35 μ longis) opposite ramosis dense intertextis compositum. *Hyphopodia capitata* opposita vel alternata 10–15 μ longa, cellula basali cylindracea 2–5 μ longa, cellula apicali rotundata vel subglobosa 8–10 μ diam. *Hyphopodia mucronata* opposita vel alternata, lageniformia. *Setae myceliales* numerosae, erectae atrae rectae usque ad 900×7–8 μ, apice cristato-dentatae –15 μ. *Perithecia* dispersa globosa atra verrucosa glabra, usque ad 140 μ diam. *Sporae* atrobrunneae, cylindraceae utrinque rotundatae, 4-septatae leniter constrictae 34–38×11–15 μ.

Hab. in foliis *Crotonis macrostachydis*, Entebbe Road, Uganda, *Hansford 2945*.

205. **Meliola Myricae** Hansford, sp. nov. [*2111.6332.*]

Plagulae epiphyllae densae atrae, usque ad 3 mm. diam., rarius amphigenae. Mycelium ex hyphis atrobrunneis sinuosis 7–8 μ crassis (cellulis 20–40 μ longis) irregulariter ramosis, dense reticulatis compositum. *Hyphopodia capitata* alternata, 28–40 μ longa, cellula basali sinuoso-cylindracea saepe curvula 5–15 μ longa, cellula apicali irregulariter sinuoso-lobata 20–28×12–20 μ. *Hyphopodia mucronata* dispersa ampulliformia. *Setae myceliales* erectae rectae rectae atrae simplices obtusae,

usque ad 400×8–10 μ. *Perithecia* dispersa atra verrucosa globosa glabra, usque ad 280 μ diam. *Sporae* ellipsoideae utrinque rotundatae, atrobrunneae curvulae 3-septatae, leniter constrictae leves 57–63×18–22 μ.

Hab. in foliis *Myricae salicifoliae*, Lwamisole, Congo Belge, *F. L. Hendrickx 1670*.

The mycelial setae are very variable in number in different colonies and are sometimes slightly flexuous at the tip ; some spores tend to be somewhat conic at the ends.

206. **Meliola Olearíae** Hansford, sp. nov. [*3113.4232.*]

Plagulae epiphyllae atrae orbiculares densae, usque ad 1 mm. diam. *Mycelium* ex hyphis atrobrunneis rectiusculis vel leniter flexuosis, 6–9 μ cr. (cellulis 12–20 μ longis) irregulariter ramosis, densissime reticulatis compositum. *Hyphopodia capitata* opposita vel alternata, numerosa, 18–25 μ longa, cellula basali cylindracea 5–9 μ longa, cellula apicali integra, ovata vel oblonga, 14–18×9–13 μ. *Hyphopodia mucronata* dispersa ampullacea. *Setae myceliales* paucae erectae atrae simplices obtusae, usque ad 400×8–10 μ. *Perithecia* dispersa globosa atra verrucosa glabra, usque ad 240 μ diam. *Sporae* cylindraceae utrinque rotundatae, atrobrunneae, leves, 4-septatae leniter constrictae 40–46×14–16 μ.

Hab. in foliis *Olearíae argyrophyllae*, Tasmania, *L. Rodway 834* (in Herb. Pretoria).

207. **Meliola Pomaderridis** Hansford, sp. nov. [*2111.4233.*]

Plagulae epiphyllae atrae orbiculares densae velutinae, usque ad 3 mm. diam. *Mycelium* ex hyphis atrobrunneis subrectis 7–9 μ cr. (cellulis 20–32 μ long.) irregulariter ramosis, dense reticulatis compositum. *Hyphopodia capitata* alternata 26–35 μ longa, cellula basali 7–16 μ longa, cylindracea, saepe antrorsa, cellula apicali irregulariter lobata 18–25× 12–20 μ. *Hyphopodia mucronata* pauca dispersa alternata vel opposita, ampullacea. *Setae myceliales* numerosae rectae erectae opacae simplices, usque ad 550×9–10 μ, apice attenuato-rotundatae nec acutae. *Perithecia* dispersa globosa atra verrucosa glabra, usque ad 220 μ diam. *Sporae* ellipsoideae utrinque rotundatae, leniter curvatae, atrobrunneae 3-septatae leniter constrictae 41–48×17–17 μ.

Hab. in foliis *Pomaderridis apetalae*, Tasmania, *L. Rodway 833* in Herb. Pretoria.

208. **Meliola singaporensis** Hansford, sp. nov. [*3111.4223.*]

Plagulae amphigenae atrae tenues orbiculares, usque ad 7 mm. diam. *Mycelium* ex hyphis atrobrunneis rectiusculis vel leniter sinuosis 6–8 μ crassis (cellulis 20–35 μ longis) irregulariter ramosis, laxe reticulatis compositum. *Hyphopodia capitata* alternata, circa 20 μ longa, cellula basali cylindracea 3–5 μ longa, cellula apicali cylindracea vel oblonga, recta vel curvula, integra 12–16×8–9 μ. *Setae myceliales* paucae dispersae erectae, rectae vel inferne curvulae, haud uncinatae, subopacae simplices obtusae, usque ad 600×8–9 μ. *Perithecia* non visa. *Sporae* late ellipsoideae utrinque rotundatae, atrobrunneae 4-septatae leniter constrictae 44–49×21–24 μ.

Hab. in foliis *Eugeniae grandis*, Singapore, Baker, Fung. malay. 457 (typus in Herb. Pretoria).

209. **Meliola Teke** Hansford, sp. nov. [*3111.5334.*]

Plagulae amphigenae atrae orbiculares densae velutinae, usque ad 5 mm. diam., vel confluentes. *Mycelium* ex hyphis atrobrunneis sinuosis 8–10 μ cr. (cellulis 20–30 μ longis) opposite ramosis, dense reticulatis compositum. *Hyphopodia capitata* alternata 20–28 μ longa, cellula basali cylindracea, recta vel saepe leniter curvata 5–9 μ longa, cellula apicali clavata integra 14–19 × 11–14 μ, recta vel curvula. *Hyphopodia mucronata* dispersa pauca opposita vel alternata, ampullacea. *Setae myceliales* numerosae erectae rectae simplices obtusae subopacae, usque ad 1100 × 10–11 μ. *Perithecia* dispersa globosa atra verrucosa glabra usque ad 230 μ diam., disco indistincto insidentia. *Sporae* cylindraceae utrinque rotundatae, atrobrunneae 4-septatae constrictae 47–52 × 19–22 μ.

Hab. in foliis *Euphorbiae Tekes*, Sezibwa Falls, Kiagwe, Uganda, *Hansford 3004.*

210. Meliola Uvariae Rehm in Philipp. Journ. Sci., viii, p. 251, 1913.

Colonies epiphyllous black arachnoid thin, up to 8 mm. diam. Mycelium of dark brown hyphae 7–9 μ wide, straight to slightly undulate, septate (20–35 μ) irregularly branched and loosely reticulate. Capitate hyphopodia alternate 20–28 μ long, stalk cell cylindric to cuneate 5–9 μ long, head cell widely clavate to subglobose, entire 13–18 × 11–15 μ. Mycelial setae not numerous, scattered, erect straight simple acute, up to 1100 × 8–10 μ. Perithecia scattered globose black verrucose glabrous, up to 250 μ diam. Spores dark brown, cylindric with rounded ends, 4-septate, slightly constricted 42–48 × 16–18 μ.

On *Uvaria*, Philippines, Baker, Fung. malay. 46 in Herb. Pretoria. Rehm's description gave the conidia and conidiophores of *Helminthosporium capense* Thuem. and the asci and spores of *Phaeophragmeriella meliolicola* (Syd.) Hansf. as belonging to this *Meliola* ; both these fungi were found parasitic on the Pretoria specimen.

211. **Meliola ventilaginicola** Hansford, sp. nov. [*3113.4221.*]

Plagulae amphigenae atrae orbiculares, usque ad 4 mm. diam. *Mycelium* ex hyphis atrobrunneis rectis 6–7 μ cr. (cellulis 20–35 μ longis) opposite ramosis reticulatis compositum. *Hyphopodia capitata* opposita vel alternata 14–19 μ longa, cellula basali cylindracea 3–6 μ longa, cellula apicali subglobosa 10–12 × 8–11 μ. *Setae myceliales* erectae rectae simplices atrae, acutae vel acuminatae, usque ad 280 × 6–8 μ. *Perithecia* dispersa globosa atra verrucosa glabra, usque ad 180 μ diam. *Sporae* atrobrunneae cylindraceae utrinque rotundatae, 4-septatae constrictae 36–41 × 12–15 μ.

Hab. in foliis *Ventilaginis africanae*, Entebbe Road, Uganda, *Hansford 2921* (typus), *2933*, *3327*, *3420*.

This species is close to *M. Thouiniae* but differs in its shorter capitate hyphopodia, which are rarely cylindric, and are more scattered.

212. **Meliola Cyathodis** Hansford, sp. nov. [*2113.6232.*]

Plagulae hypophyllae orbiculares tenues atrae, usque ad 2 mm. diam. *Mycelium* ex hyphis atrobrunneis 7–9 μ cr. (cellulis 10–30 μ longis) subrectis vel lenissime undulatis, irregulariter ramosis, laxe reticulatis

compositum. *Hyphopodia capitata* opposita vel alternata, 23–35 μ longa, cellula basali cylindracea saepe curvata vel sinuosa, 7–14 μ longa, cellula apicali angulosa vel irregulariter lobata, saepe curvata, 15–25 $\times$ 10–20 μ. *Setae myceliales* erectae dispersae paucae, rectae simplices subacutae atrae, usque ad 360 $\times$ 7–9 μ. *Perithecia* in centro plagularum aggregata, atra globosa verrucosa glabra, usque ad 240 μ diam. *Sporae* cylindraceae utrinque rotundatae vel attenuatae, atrobrunneae leves 3-septatae leniter constrictae 53–63 $\times$ 16–18 μ.

Hab. in foliis *Cyathodis glauci*, Tasmania, *L. Rodway 421* in Herb. Pretoria.

213. Meliola Dummeri Hansford var. **brachyodonta** (Syd.) Hansford, comb. nov. [*3131.4231.*]

Syn. *Meliola brachyodonta* Syd. in Bothalia, II, p. 442, 1928.
Meliola geniculata var. *macrospora* Doidge in Trans. R. Soc. S. Africa, VIII, p. 109, 1920.

On *Rhus* spp., South Africa. Some collections show variation from the common 2–3-dentate type of setal tip to the more pronounced forking of *M. Dummeri* ; in other characters there is little difference from the type of *M. Dummeri* ; the description in Bothalia, l.c., is accurate.

214. Meliola Dummeri Hansf. in Journ. Linn. Soc., LI, p. 540, 1938.

A collection very close to this has been received from the Congo Belge : on *Allophyllus* sp., Kivu, *F. L. Hendrickx 2119* ; it differs merely in slightly more flexuous hyphae and somewhat angulose or irregular capitate hyphopodia ; the setae are well within the range of the type, which has been found only on *Rhus villosa* in Uganda.

215. Meliola anacardii Zimm. in Centralbl. f. Bakt., Abt. II, VIII, p. 151, 1902.

The following notes were made from Zimmermann's specimen in Herb. Amani, on *Anacardium occidentale*, Botanic Gardens, Buitenzorg, Java, possibly the type specimen :—

Colonies epiphyllous, rather thin, black, orbicular, up to 1 mm. diam. Mycelium of brown hyphae 6 μ wide, the cells 20–30 μ long, straight or slightly wavy, oppositely branched to form a loose network. Capitate hyphopodia alternate only, 14–20 μ long, head cell very variable, from globose to long ovate-oblong, often reflexed, 11–15 $\times$ 7–11 μ, stalk cell cylindric, 3–6 μ long. Mucronate hyphopodia scattered, opposite, narrowly ampulliform, with bent neck. Mycelial setae scattered, up to 280 $\times$ 6–7 μ, straight, black, 2–3-dentate to 8 μ at the apex. Perithecia scattered, 140–180 μ diam., black, globose, verrucose, glabrous. Spores dark brown, cylindric with rounded ends, smooth, 4-septate, constricted, 40–45 $\times$ 17–19 μ.

The Beeli formula is thus 3131.4221 ; the *Meliola* described by Sydow in Ann. Myc., XXI, p. 93, 1923, and mentioned by Stevens, l.c., XXVI, p. 194, 1928, as having a formula 3131.3222, is not *M. Anacardii* ; we have not seen specimens of this form and are therefore unable to suggest its correct name.

216. **Meliola malabarensis** Hansford, sp. nov. [*3113.3222.*]

Plagulae amphigenae atrae, tenues vel subdensae, usque ad 5 mm. diam. vel confluentes. *Mycelium* ex hyphis atrobrunneis subrectis 5–6 μ cr. (cellulis plerumque 15–20 μ longis) opposite ramosis (45–60°) reticulatis compositum. *Hyphopodia capitata* alternata vel 2–5 per cent. opposita, suberecta, 10–14 μ longa, cellula basali cylindracea 2–4 μ longa, cellula apicali cylindraceo-clavata integra 8–11 × 6–8 μ, plerumque recta. *Hyphopodia mucronata* in centro plagularum dispersa, opposita vel alternata, subconoidea vel anguste ampullacea, recta vel curvula, 15–25 × 6–8 μ. *Setae myceliales* dispersae erectae rectae simplices acutae, 250–400 × 6–8 μ. *Perithecia* dispersa atra globosa verrucosa, usque ad 150 μ diam., basi hyphis hyphopodiatis circumdata. *Sporae* atrobrunneae cylindraceae utrinque rotundatae, 4-septatae constrictae, 30–36 × 13–16 μ (av. 33·3 × 12·5 μ).

Hab. in foliis *Oleae* spec., Kanouth, Tellicherry, Malabar, India, *E. J. Butler*, 26.9.1904.

217. **Meliola Petchii** Hansford, sp. nov. [*3111.3221.*]

Plagulae amphigenae atrae orbiculares, usque ad 5 mm. diam. vel confluentes, tenuiter velutinae. *Mycelium* ex hyphis atrobrunneis 6–7 μ cr. (cellulis plerumque 20–30 μ longis) subrectis, opposite ramosis (30–45°), laxe vel subdense reticulatis compositum. *Hyphopodia capitata* alternata, plus minusve antrorsa, recta, 18–25 μ longa, cellula basali cylindracea 4–9 μ longa, cellula apicali cylindraceo-clavata integra 12–17 × 7–10 μ. *Hyphopodia mucronata* pauca, dispersa, opposita vel alternata, conoidea vel ampullacea, recta vel curvata, 15–22 × 7–8 μ, plerumque in centro plagularum evoluta. *Setae myceliales* numerosae dispersae erectae rectae simplices acutae, 200–280 × 7–8 μ. *Perithecia* dispersa atra globosa verrucosa 110–140 μ diam. *Sporae* atrobrunneae, cylindraceae utrinque rotundatae, 4-septatae constrictae, 32–38 × 12–15 μ (av. 35·0 × 13·8 μ).

Hab. in foliis *Strychni Nux-vomicae*, Peradeniya, Ceylon, Herb. Peradeniya 6518 ; ibid.

218. **Meliola amaniensis** Hansford, sp. nov. [*3111.5221.*]

Plagulae amphigenae densae atrae orbiculares, usque ad 5 mm. diam. vel confluentes. *Mycelium* ex hyphis atrobrunneis sinuosis vel flexuosis 6–8 μ crassis (cellulis plerumque 20–30 μ longis) irregulariter ramosis, dense reticulatis compositum. *Hyphopodia capitata* alternata, raro recta et clavata, plerumque sinuosa vel curvata, 17–30 μ longa, cellula basali cylindracea, recta vel curvata 3–15 μ longa, cellula apicali clavata vel curvato-clyindracea, saepe irregulariter angulosa, versiformi, 12–20 × 8–13 μ, apice rotundata vel truncata. *Hyphopodia mucronata* in hyphis paucis in centro plagularum, inter hyphopodia capitata evoluta, opposita vel alternata, saepe dense stipata, breviter ampullacea 12–18 × 7–10 μ. *Setae myceliales* paucae vel numerosae, erectae rectae atrae simplices acutae, 240–300 × 9–10 μ. *Perithecia* dispersa atra globosa verrucosa, usque ad 180 μ diam. *Sporae* atrobrunneae, cylindraceae utrinque rotundatae, 4-septatae constrictae, 46–57 × 16–22 μ (av. 51·4 × 18·3 μ).

Hab. in foliis *Pittospori undulati*, Amani, Tanganyika, *Grote*, 30.9.1913 (in Herb. Peradeniya).

This specimen was determined by Sydow originally as *Meliola lanceolato-setosa*. It differs markedly in mycelial and hyphopodial characters from *M. polytricha*, the usual species on *Pittosporum* spp. in Africa.

219. **Meliola Salaciae** Hansford, sp. nov. [*311/33.4222*]

Plagulae epiphyllae, raro hypophyllae, atrae, orbiculares, subdensae vel tenues, usque ad 3 mm. diam. *Mycelium* ex hyphis atrobrunneis subrectis vel leniter sinuosis 6–7 μ crassis (cellulis plerumque 15–20 μ longis) opposite ramosis (60–90°), laxe vel dense reticulatis compositum. *Hyphopodia capitata* alternata vel 10–20 per cent. opposita, plerumque plus minusve antrorsa, recta vel curvula, 14–18 μ longa, cellula basali cylindracea 3–6 μ longa, cellula apicali clavata integra 10–14 × 8–10 μ. *Hyphopodia mucronata* dispersa ampullacea 12–20 × 6–9 μ. *Setae myceliales* dispersae erectae atrae simplices, acutae vel obtusae, vel 2-dentatae (–10 μ), 300–480 × 8–9 μ. *Perithecia* dispersa atra globosa verrucosa glabra 120–170 μ diam. *Sporae* atrobrunneae cylindraceae utrinque rotundatae, 4-septatae constrictae, 36–43 × 13–16 μ (av. 39·3 × 14·8 μ).

Hab. in foliis *Salaciae elegantis*, Entebbe Road, Uganda, *Hansford 3362*.

220. Meliola Phytolaccae Hansf. & Stev. var. **dichotoma** Hansford, var. nov. [*3143.3221.*]

Plagulae epiphyllae atrae orbiculares densae velutinae usque ad 2 mm. diam. *Hyphae* atrobrunneae subrectae vel leniter undulatae 5–6 μ cr. (cellulis plerumque 15–20 μ longis) opposite ramosis (60–90°) dense reticulatae. *Hyphopodia capitata* alternata vel 10–20 per cent. opposita, antrorsa, subrecta, 12–17 μ longa, cellula basali cylindracea 3–6 μ longa, cellula apicali subglobosa integra 9–12 × 8–11 μ. *Hyphopodia mucronata* pauca dispersa, opposita vel alternata, ampullacea 12–17 × 6–8 μ. *Setae myceliales* numerosae atrae erectae rectae 110–170 × 8–10 μ, sursum 2–3-dichotomae, ramis –35 μ, ramulis –20 μ acutis vel dentatis. *Perithecia* dispersa atra globosa verrucosa, usque ad 140 μ diam. *Sporae* atrobrunneae cylindraceae utrinque rotundatae, 4-septatae constrictae 30–39 × 11–14 μ.

Hab. in foliis *Phytolaccae dodecandrae*, Entebbe Road, Uganda, *Hansford 3426*.

221. **Meliola acanthacearum** Hansford, sp. nov. [*3111.3221.*]

Plagulae epiphyllae atrae, 0·2–0·5 mm. diam., aegre perspicues. *Mycelium* ex hyphis atrobrunneis, subrectis vel leniter sinuosis 6–8 μ cr. (cellulis plerumque 15–20 μ longis) parce irregulariterque ramosis, laxe radianto-reticulatis compositum. *Hyphopodia capitata* alternata, plus minusve antrorsa, 20–30 μ longa, cellula basali cuneato-cylindracea 5–11 μ longa, cellula apicali ovata vel cylindraceo-clavata, integra 15–20 × 8–11 μ. *Hyphopodia mucronata* dispersa, opposita vel alternata, pauca ampullacea. *Setae myceliales* praecipue juxta perithecia evolutae, erectae rectae obtusae simplices 200–300 × 9 μ. *Perithecia* in centro plagularum dense aggregata, globosa atra verrucosa, 130–170 μ diam.

Sporae atrobrunneae, cylindraceae utrinque rotundatae, 4-septatae constrictae 31–35 × 12–14 μ.

Hab. in foliis *Justiciae flavae*, Entebbe Road, Uganda, *Hansford 3428* (typus), *1815* ; in foliis *Mimulopsis* spec., Uganda, *Hansford 1417*.

222. **Meliola Polysciatis** Hansford, sp. nov. [*3121.4221.*]

Plagulae epiphyllae, atrae velutinae orbiculares, usque ad 0·5 mm. diam., aegre perspicuae. *Mycelium* ex hyphis atrobrunneis flexuosis 6–7 μ cr. (cellulis plerumque circa 20 μ longis) alternatim ramosis, laxe vel subdense reticulatis compositum. *Hyphopodia capitata* alternata, recta vel antrorse curvata, 13–20 μ longa, cellula basali cylindracea 3–6 μ longa, cellula apicali late clavata, integra 9–14 × 8–11 μ. *Hyphopodia mucronata* in hyphis distinctis evoluta, dense stipata, opposita ampullacea circa 15 × 6–9 μ, collo erecto curvato. *Setae myceliales* numerosae erectae, flexuosae vel arcuatae, haud rectae, simplices obtusae 180–220 × 8–9 μ. *Perithecia* dispersa atra globosa verrucosa 140–170 μ diam. *Sporae* atrobrunneae, cylindraceae utrinque rotundatae, 4-septatae, constrictae, 43–47 × 15–17 μ.

Hab. in foliis *Polysciatis fulvae*, Entebbe Road, Uganda, *Hansford 3487*.

223. **Meliola Capparidis** Hansford, sp. nov. [*3133.4222.*]

Plagulae epiphyllae atrae tenues orbiculares, 1–2 mm. diam., tenuiter velutinae. *Mycelium* ex hyphis atrobrunneis subrectis 6–7 μ cr. (cellulis plerumque circa 15 μ longis) opposite ramosis (75–90°) laxe reticulatis compositum. *Hyphopodia capitata* alternata vel 1·5 per cent. opposita, suberecta vel antrorsa, recta, 15–18 μ longa, cellula basali cylindracea 2–5 μ longa, cellula apicali subglobosa vel late ovato-clavata, integra 9–12 × 9–11 μ. *Hyphopodia mucronata* dispersa, opposita vel alternata, subconoidea vel anguste ampullacea, 18–21 × 7–10 μ, collo subrecto. *Setae myceliales* laxe dispersae et juxta perithecia aggregatae, erectae subrectae 220–360 × 8–9 μ, apice 2–3-dentatae (–8 μ). *Perithecia* dispersa atra globosa verrucosa, usque ad 160 μ diam. *Sporae* atrobrunneae, cylindraceae utrinque rotundatae, 4-septatae constrictae 34–40 × 13–16 μ (av. 35·3 × 14·5 μ).

Hab. in foliis *Capparidis Afzelii*, Entebbe Road, Uganda, *Hansford 3483*.

224. **Meliola osyridicola** Hansford, sp. nov. [*3111.5331.*]

Plagulae amphigenae et caulicolae, dispersae, densae, atrae, usque ad 1 mm. diam., velutinae, subcrustosae. *Mycelium* ex hyphis atrobrunneis, subrectis vel leniter sinuosis 7–10 μ cr. (cellulis plerumque 15–20 μ longis) opposite ramosis (45–90°) densissime reticulato-radiantibus compositum. *Hyphopodia capitata* alternata, 18–30 μ longa, antrorsa, cellula basali cylindracea 6–14 μ longa, cellula apicali ovata vel clavata, integra, 13–17 × 9–12 μ. *Hyphopodia mucronata* non visa. *Setae myceliales* dense dispersae et juxta perithecia aggregatae, 180–240 × 8–o μ, rectae simplices, obtusae vel subacutae. *Perithecia* in centro plagularum dense aggregata, atra globosa verrucosa 180–230 μ diam. *Sporae* atrobrunneae, cylindraceae vel ellipsoideae utrinque rotundatae, 4-septatae constrictae 44–53 × 16–21 ; av. 48·4 × 18·4 μ).

Hab. in foliis *Osyridis arboreae*, Ooty, South India, leg. *Krishnaswamy* 14.3.1937 (Herb. Coimbatore).

225. **Meliola Ranganathii** Hansford, sp. nov. [*3111.4222.*]

Plagulae amphigenae atrae subdensae, 1–3 mm. diam. vel confluentes. *Mycelium* ex hyphis subrectis vel leniter flexuosis atrobrunneis 6–8 μ cr. (cellulis plerumque 10–15 μ longis) opposite denseque ramosis (60–90°) dense reticulatis compositum. *Hyphopodia capitata* alternata, recta vel curvula, 13–22 μ longa, cellula basali cylindracea 4–8 μ longa, cellula apicali cylindracea vel clavata, integra, recta vel curvata 10–18 × 7–10 μ. *Hyphopodia mucronata* pauca dispersa, opposita vel alternata, conoidea recta vel curvata, 14–18 × 6–9 μ. *Setae myceliales* paucae dispersae erectae rectae atrae simplices acutae 200–340 × 7–8 μ. *Perithecia* dispersa atra globosa verrucosa 130–170 μ diam. *Sporae* atrobrunneae cylindraceae utrinque rotundatae, 4-septatae constrictae 39–42 × 16–19 μ (av. 37·6 × 17·2 μ).

Hab. in foliis *Eugeniae* spec., S. Kanara, Bombay, India, leg. *Ranganath* 27.3.1913 (Herb. Coimbatore).

226. **Chaetosphaeria insectivora** Hansford, sp. nov.

Mycelium tenue atrum in insectis parasitans, ex byphis radiantibus, irregulariter ramosis, atrobrunneis 5–6 μ cr. (cellulis 7–10 μ longis) dense reticulatis compositum ; cellulae hypharum saepius cellulas duas hyalinas hemisphaericas circa 4 μ diam. ferentes, quarum una, raro ambae, in ramo atrobrunneo erecto continuo usque ad 15 × 4–5 μ crescit. *Conidia* obclavata basi rotundata, apice in rostro subhyalino attenuata, transverse 3–4-septata et oblique 1–2-septata, haud constricta, levia, tota 30–60 × 6–8 μ, rostro 15–40 × 2 μ, parte inferiore atrobrunnea. *Perithecia* rara, dispersa, superficialia atra globosa levia, 80–110 μ diam. ; paries unistratosus ex cellulis atrobrunneis rotundato-angulosis 7–10 μ diam. et circa 5 μ cr. compositus, circum apicem perithecii setis 2–6 incurvatis opace atris simplicibus obtusis levibus 40–70 × 7–8 μ ornatus, apice poro rotundato 15–20 μ diam. pertusus. *Asci* numerosi basales aparaphysati cylindraceo clavati, sursum rotundati, haud incrassati, deorsum attenuati, sessiles 40–50 × 10–12 μ, 8-spori. *Sporae* oblique 2-seriatae, atrobrunneae, ellipsoideae utrinque rotundatae, leves, 3-septatae, haud constrictae, 11–13 × 5 μ.

Hab. in foliis *Aristolochiae densiveniae*, in insectis parasiticum, Entebbe Road, Uganda, *Hansford 3381* (typus), *3495*.

The mycelium is very peculiar in that most of the cells form at their distal end two small hyaline hemispherical cells, of which one, rarely both, grows out into a dark erect short continuous branch, rounded at the apex. These may be the conidiophores, but no attached conidia have been found on them. The fungus rarely forms perithecia, but in the conidial stage has been collected repeatedly on a number of plants in Uganda, always associated with what appears to be the same insect, probably a scale or aleyrodid ; specimens are *Hansford 849*, *1354* on *Coffea liberica*, *3245* on *Artabotrys* and *3260* on *Ficus*. The conidia resemble those of the form genus *Alternaria* but are not catenulate, and the longitudinal septa are in reality oblique from the centre of one of the cross septa to the edge of the next below or to one side of the basal cell.

227. **Dimeriella Cissampeli** Hansford, sp. nov.

Plagulae hypophyllae effusae olivaceae brunneae tenues, vix perspicues. *Mycelium* in pilis tomenti folii parasitans et per stomata in mesophyllum penetrans; hyphae superficiales brunneae septatae sinuosae ramosae exhyphopodiatae 2–3 μ cr.; hyphae intramatricales hyalinae ramosae 0·5–1 μ cr., intercellulares; haustoria nulla. *Perithecia* superficialia inter pilos folii dispersa, globosa atra 100–130 μ diam., primo astoma, demum ostiolo applanato-conico, poro 10–15 μ diam. pertuso praedita; paries unistratosus ex cellulis angulosis compositus, hyphis mycelii dispersis ornatus. *Asci* numerosi clavato-cylindracei subsessiles, apice rotundati haud incrassati 8-spori 50×8 μ; paraphyses numerosae filiformes, simplices vel furcatae, clavulatae, 1 μ crassae. *Sporae* 1–2-seriatae, ellipsoideae vel clavulatae, 1-septatae haud constrictae, utrinque rotundatae, hyalinae leves 10–15×2·5–3·5 μ, cellula inferiore attenuata.

Hab. in foliis *Cissampeli mucronatae*, Kawanda, Kampala, Uganda, *Hansford 2846* (typus), *2550*, *2920*, *2891*, *2993*, *3142*, *3276*, *3409*.

The fungus is parasitic upon the leaf hairs, which are discoloured to dirty brown; this discoloration is the only visible symptom of attack, as the external mycelium is not apparent as a definite colony. Though typical perithecial setae are not present, the perithecia are by no means glabrous, but have numerous mycelial hyphae arising from the wall cells, especially from the upper half of the perithecium; the outer surface of the wall is granulose, obscuring the cell walls below. A few mycelial hyphae enter the stomata and penetrate the intercellular spaces of the mesophyll; no haustoria are formed in the host cells.

228. **Dimeriella Tetrorchidii** Hansford, sp. nov.

Perithecia hypophylla, laxe dispersa, superficialia, globosa, atrobrunnea, circa 100 μ diam., superne setis erectopatentibus 15–40, atris, subrectis 20–50×3–5 μ, indistincte septatis, sursum irregulariter ramosis ornata. Paries perithecii unistratosus ex cellulis angulosis 5–10 μ diam. compositus, apice poro rotundato 10–15 μ diam. pertusus. *Asci* numerosi basales saccati sessiles, apice rotundatae leniter incrassati, circa 35×12–15 μ, 8-spori. *Paraphyses* numerosae hyalinae filiformes 1 μ cr. *Sporae* oblique 2–3-seriatae, hyalinae clavulato-ellipsoideae utrinque rotundatae, 1-septatae, non vel lenissime constrictae, leves, 13–16×3–4 μ, cellula basali attenuata.

Hab. in foliis *Tetrorchidii didymostemonis* Entebbe Road, Uganda, *Hansford 3492*.

229. **Dimeriella lichenicola** Hansford, sp. nov.

Plagulae tenues inconspicuae minutae epiphyllae. *Mycelium* pelliculosum tenue, ex hyphis subhyalinis vel dilute olivaceis indistincte septatis, parce ramosis, 2–3 μ cr. exhyphopodiatis compositum. *Perithecia* pauca, superficialia atra subglobosa 100–120 μ diam.; paries unistratosus ex cellulis angulosis 8–12 μ diam., 5–10 μ cr. compositus; setae ex parte superiore oriundae usque ad 15, erecto radiantes, opacae, superne pallidiores, irregulariter ramosae, usque ad 40×5–6 μ, ramis –20 μ longis, apice irregulariter 2–3-divisis. *Asci* numerosi basales fasciculati, in maturitate aparaphysati, ellipsoideo cylindracei subsessiles 8-spori 50×

10μ. *Sporae* oblique 1–2-seriatae hyalinae ellipsoideae 1-septatae, vix constrictae, leves 15×4 μ, cellulis aequalibus.

Hab. in foliis *Acalyphae fruticosae*, socio Lichenes indet., Mukono, Kiagwe, Uganda, *Hansford 2977*.

The mycelium penetrates the lichens but no definite evidence of parasitism on the *Acalypha* leaf has been obtained. Usually only a single perithecium in each minute colony, surrounded by mycelial hyphae arising from its base and sides.

230. **Dimeriella Cissi** Hansford, sp. nov.

Perithecia hypophylla dispersa, singula in tomento folii abscondita superficialia atra globosa 80–100 μ diam. ; paries membranaceus 1–2-stratosus parenchymaticus atro-olivaceus ; superne setis 0–20, erectis vel patentibus, atrobrunneis, apice pallidioribus, septatis, simplicibus, rectis vel flexuosis, obtusis, usque ad 100×5 μ ornata. *Asci* in maturitate aparaphysati, basales ellipsoideo-saccati 8-spori, deorsum attenuato-stipitati, sursum rotundati incrassati (–3 μ), circa 40×15 μ. *Sporae* 2–3-seriatae hyalinae ellipsoideae leves 1-septatae, vix constrictae, 18–21×6–8 μ, cellulis aequalibus.

Hab. in foliis *Cissi tiliifoliae*, Entebbe Road, Uganda, *Hansford 2996* (typus), *3300*.

The mycelium is parasitic on the leaf hairs and also on the mesophyll of the leaf, entering through the stomata ; the internal hyphae are subhyaline, much branched, not forming haustoria ; no leafspots are produced.

231. **Dimeriella Woodii** Hansford, sp. nov.

Mycelium hypophyllum ex hyphis dilute olivaceis vel subhyalinis exhyphopodiatis, irregulariter ramosis, septatis 2–3 μ cr., laxe reticulatis compositum. *Perithecia* inter pilos folii singulariter dispersa, globosa, atrobrunnea, usque ad 120 μ diam., superne setis 5–20, erectis vel patentibus, atrobrunneis, usque ad 50×4–5 μ, septatis, sursum irregulariter dichotome furcatis, apice pallidioribus ornata ; paries perithecii unistratosus, ex cellulis angulosis 5–8 μ diam., pellucide brunneis compositus, vertice poro rotundato 15 μ diam. pertusus. *Asci* cylindraceo-ellipsoidei, apice rotundati, haud incrassati, breviter nodoso-stipitati, 8-spori, 40–50×12–15 μ, aparaphysati. *Sporae* oblique 1–2-seriatae, ellipsoideae utrinque leniter attenuato-rotundatae, hyalinae, 1-septatae, vix constrictae, leves, circa 20×6 μ, cellula superiore lenissime crassiore.

Hab. in foliis *Loxostylidis* spec., South Africa, *J. M. Wood* (Herb. Pretoria 9026).

The fungus is associated with *Meliola Loxostylidis* on the same leaves, but often occurs separately from this and is not hyper-parasitic upon it. The mycelium is parasitic on the leaf hairs and ramifies loosely between them to form a very thin colony ; some hyphae also enter the stomata and penetrate the intercellular spaces of the mesophyll, not producing haustoria.

232. Dimeriella Corni (Syd.) Hansford, Mycol. Pap. Imp. Mycol. Inst., 15, p. 42, 1946.

Syn. *Episphaerella Corni* Syd. in Ann. Myc., xxiv, p. 332, 1926.

Part of Sydow's type collection on *Cornus disciflora*, Costa Rica, was

examined in Herb. Pretoria. The mycelium in the mesophyll is intercellular and penetrates the whole leaf tissues, emerging through the stomata and forming the perithecia on external hyphae. The description given by Sydow is accurate, but there seems no reason to separate the fungus from *Dimeriella*.

233. **Dimeriella Maesae** Hansford, sp. nov.

Plagulae epiphyllae tenuissimae, vix perspicuae, brunneae usque ad 1 mm. diam. *Mycelium* ex hyphis subhyalinis vel dilute olivaceis, parce ramosis exhyphopodiatis, indistincte septatis, 2·5–4 μ cr., saepe 2–3-parallelis compositum. *Haustoria* nulla ; hyphae mycelii sub cuticula folii penetrantes, ibidem ramosissimae hyalinae, breviter septatae, 1–3 μ cr. *Perithecia* dispersa, superficialia sessilia, globosa vel leniter papillata, atro-olivacea, superne ad ostiolum indistinctum pallidiora, poro 10–12 μ diam. pertusa, 40–80 μ diam., superne setosa ; setae 4–10, atrobrunneae, continuae, obtusae vel irregulariter dichotomo-divisae, 20–40 × 4–6 μ ; paries perithecii unistratosus ex cellulis angulosis atro-olivaceis 5–10 μ diam. compositus. *Asci* 4–8, aparaphysati, basales, ellipsoidei, sessiles vel brevissime nodoso-stipitati, sursum rotundati lenissime incrassati, 40 × 15–18 μ, 8 spori. *Sporae* hyalinae, elongato-ellipsoideae, 1-septatae, leniter constrictae, leves, 16–18 × 4–5 μ, cellula superiore breviore crassioreque.

Hab. in foliis *Maesae lanceolatae*, Kawanda, Uganda, *Hansford 1799*; Entebbe Road, Uganda, *Hansford 2907, 3192, 3350*.

The subcuticular much branched internal mycelium arises as scattered lateral branches of the external coloured hyphae, penetrating direct through the cuticle and forming loose plates up to about 40 μ diam., which subsequently coalesce. There are no haustoria in the epidermal cells, and apparently the mycelium does not penetrate downwards between them.

234. **Balladynella Myrianthi** Hansford, sp. nov.

Mycelium hypophyllum ex hyphis dilute olivaceis, superficialibus, irregulariter ramosis, exhyphopodiatis, 3–4 μ cr., septatis compositum. *Setae* nullae. *Hyphae* intramatricales in stomata et inter cellulas mesophylli penetrantes ; stomopodia et haustoria nulla. *Perithecia* superficialia in greges 4–10 dense aggregata, discreta, conoidea atra glabra, usque ad 200 μ alt. et 160 μ diam., superne ostiolata, poro pertusa ; paries 2–3-stratosus, ex cellulis angulosis atrobrunneis subopacis 6–10 μ diam. compositus, intus in strato uno hyalino transiens, usque ad 12 μ cr., coriaceus. *Asci* numerosi, in maturitate aparaphysati, basales, 8-spori, subsessiles, sursum rotundati, circa 80 × 20 μ. *Sporae* 2–3-seriatae, ex hyalino in maturitate brunnescentes, oblongae vel clavulatae, utrinque obtusae, leves 1-septatae, haud constrictae, 32–37 × 8–10 μ, cellula superiore saepe leniter crassiore.

Hab. in foliis *Myrianthi arborei*, Mukono, Kuagwe, Uganda, *Hansford 3045*.

The internal mycelium penetrates the intercellular spaces of the mesophyll and is connected to the external hyphae through the stomata ;

no stomopodia or haustoria are formed. The external hyphae ramify between the dense leaf hairs, but do not form a visible dark colony ; leafspots none.

235. **Aphanostigme erythrinicola** Hansford, sp. nov.

Perithecia hypophylla, inter pilos folii laxe dispersa, superficialia brunnea, sub microscopio dilute olivacea, 100–140 μ diam., 140–180 μ alt., ovata vel subglobosa, sursum setosa ; paries circa 10 μ cr., parenchymaticus, extus hyphis intertextis ramosis septatis (cellulis 10–15 $\times$ 6–9 μ) tectus ; cellulae strati exterioris dilute olivaceae angulosae, circa 5 μ diam. ; strata interiora 2–4, usque ad 7 μ cr., ex cellulis hyalinis compressis angulosis composita, ostiolum versus in periphyses hyalinas numerosas filiformes resolventia. *Setae peritheciales* 4–10, dispersae, erecto-patentes, simplices, subrectae, obtusae, septatae, usque ad 150 $\times$ 5–7 μ, atro-brunneae, sursum leniter attenuatae et pallidiores. *Asci* basales aparaphysati numerosi, ellipsoidei vel clavati, subsessiles vel breviter stipitati, sursum rotundati incrassatique (–20 μ) gelatinosi, 8-spori, usque ad 80 $\times$ 20 μ. *Sporae* inordinatae vel oblique 2–3-seriatae, clavulato-cylindraceae utrinque obtusae, 3-septatae, hyalinae, vix constrictae, leves, circa 25 $\times$ 4 μ, deorsum lenissime attenuatae.

Hab. in foliis *Erythrinae tomentosae*, Entebbe Road, Uganda, *Hansford 3499 p.p.*

The perithecia are squat conoid, produced on a hyaline mycelium like that of *Stilbum Erythrinae*, thinly scattered among those of *A. Erythrinae* and the coremia of the *Stilbum* ; a second mycelium of wider, dark brown septate hyphae producing numerous erect or decumbent setae and rudiments of perithecia is also present. In view of this mixture of fungi present it is rather doubtful whether the present fungus is parasitic upon the leaf or leaf-hairs, or upon one of the other mycelia present ; it may possibly be the perithecial stage of the *Stilbum*.

236. **Aphanostigme Erythrinae** Hansford, sp. nov.

Maculae nullae. *Perithecia* hypophylla laxe dispersa, plus minusve in tomento folii abscondita, superficialia, subglobosa vel depresso-conoidea, atra, 150–230 μ diam. et alt., sursum setis numerosis dispersis erectis rectis vel flexuosis atris (apice pallidioribus), obtusis simplicibus 30–50 $\times$ 3–4 μ ornata ; paries perithecii parenchymaticus 2-stratosus, cellulis exterioribus angulosis 7–10 μ diam. brunneis, interioribus subhyalinis 4–7 $\times$ 3–4 μ, paries totus circa 8 μ cr., vertice poro rotundato 30 μ diam. pertusus. *Asci* numerosi basales fasciculati cylindracei, recti vel sursum incurvati, apice rotundati incrassati (–3 μ), basi nodoso-stipitati, 8-spori, circa 75 $\times$ 12–15 μ. *Paraphyses* filiformes hyalinae 1–1·5 μ cr., simplices, numerosae. *Sporae* oblique 1–2-seriatae, clavulato-cylindraceae, utrinque obtusae, 3-septatae, non vel vix constrictae, hyalinae, leves, circa 15 $\times$ 4 μ, deorsum lenissime attenuate.

Mycelium ex hyphis hyalinis vel dilute olivaceis, ramosis, septatis, 2–3 μ cr. compositum, in pilis folii parasiticum.

Hab. in foliis *Erythrinae tomentosae*, Entebbe Road, Uganda, *Hansford 3499 p.p.*

237. **Aphanostigme Phragmitis** Hansford, sp. nov.

Plagulae amphigenae, tenuissimae, dilute olivaceae, effusae, facile secedentes. *Mycelium* ex hyphis flexuosis vel subrectis, olivaceis exhyphopodiatis, irregulariter ramosis, septatis, 3–4 μ cr., compositum. *Setae myceliales* nullae. *Perithecia* laxe dispersa vel laxe aggregata, superficialia, atra, globosa vel ovata, circa 60 μ diam. et alt., vertice poro 10 μ diam. pertusa; paries perithecii parenchymaticus, levis, olivaceus, cellulis angulosis 7–10 μ diam. et 5 μ cr., strato interiore hyalino aegre perspicuo. *Setae peritheciales* 0–4, radiantes, olivaceae, septatae, simplices, ex parte superiore perithecii oriundae et in hyphas mycelii transientes. *Asci* basales, aparaphysati late ovati, sessiles, apice rotundati incrassati (–4 μ), 8-spori, 25–30 × 15–17 μ, pauci. *Sporae* plus minusve parallelae, hyalinae, fusoideae utrinque obtusae, curvulae, leves, 3-septatae, haud constrictae, 16–18 × 5–6 μ.

Hab. in foliis *Phragmitis mauritiani*, Entebbe Road, Uganda, *Hansford 3403*.

The mycelium appears to be entirely superficial among the leaf-hairs, meandering over the cuticle on both sides of the leaf, and in places forming small knots of shortly septate branches. Sections of the leaf are very difficult to make, and those examined show no penetration of the host, though it is possible that this does occur beneath the mycelial knits. The mycelium is easily removed from the leaf, and does not cause leafspots or other discoloration.

238. **Calonectria Jasmini** Hansford, sp. nov.

Perithecia hypophylla dispersa singula albida globosa, usque ad 120 μ diam., superficialia, breviter tomentosa, haud setosa; paries 5–8 μ cr., parenchymaticus, pluristratosus; stratum externum ex cellulis angulosis 5–8 μ diam. compositum; strata interiora ex cellulis hyalinis angulosis, fortiter compressis composita, in sectione concentrice fibrosa; poro apicali rotundato pertusus (20–30 μ diam.), extus in parte superiore hyphis mollibus numerosis tenerrimis hyalinis simplicibus obtusis continuis –25 × 2–3 μ vestitus, eisdem in hyphis mycelii deorsum transientibus. *Mycelium* tenuissimum pelliculosum, ex hyphis hyalinis reticulatis 2–3 μ cr., indistincte septatis, ramosissimis subagglutinatibus superficialibus compositum. *Asci* basales fasciculati, aparaphysati ellipsoideo-saccati, sursum rotundati, incrassati (–3 μ), deorsum attenuati, sessiles vel nodoso stipitati, 8-spori, in maturitate usque ad 70 × 17 μ. *Sporae* 3-seriatae, clavulatae hyalinae utrinque rotundatae, apice obtusae, deorsum attenuatae, basi subacutae, 3-septatae, haud constrictae, leves 26–32 × 4–5 μ.

Hab. in foliis *Jasmini dichotomi*, Entebbe Road, Uganda, *Hansford 3114*.

The fungus occurs on the lower surface of the host leaves, and may possibly be parasitic on young sori of *Hemileia*, or merely saprophytic on plant debris accumulating on the leaves in the shaded forest. The spores often begin germination in the ascus, by short byphae produced singly from each end, and then resemble those of *Paranectria*; in habit the species closely resembles Chaetothyriaceae, but the complete absence of colour removes it from that family.

239. **Microcallis Oleae** Hansford, sp. nov.

Plagulae tenues atrae orbiculares hypophyllae, raro etiam epiphyllae, 2–10 mm. diam., vel confluentes et effusae. *Mycelium* omnino superficiale, ex hyphis dilute brunneis cylindraceis septatis (20–50 μ), irregulariter ramosis, flexuosis, dense reticulatis, exhyphopodiatis, 2·5–3·5 μ cr. compositum. *Perithecia* dispersa, depresso globosa, 60–120 μ diam., 50–60 μ alt., glabra, olivacea ; paries ex strato uno pseudoparenchymatico cellularum 5–10 × 5–6 μ, haud radiato, margine in hyphis mycelii transeunto, et strato interiore hyalino parenchymatico compositus ; nucleus hyalinus parenchymaticus, mucoso diffluens. *Asci* circa 15, ovati vel saccati, sursum rotundati incrassati (–3 μ), sessiles vel subsessiles, 8-spori, 35–45 × 18–25 μ. *Sporae* 2-3-seriatae vel conglobatae, hyalinae dein dilute olivaceae, oblongae utrinque obtusae, non vel vix constrictae, 1-septatae leves, 12·5–14 × 4·5–5·5 μ, cellulis aequalibus vel inferiore lenissime attenuata.

Hab. in foliis *Oleae capensis*, Knysna, Cape Province, South Africa, Herb. Pretoria 32281.

The mycelium forms dark plugs of 2–3 cells in the outer cavity of the stomata, but does not penetrate further between the guard cells. The outermost layer of the perithecial wall is of mycelial origin, continuous around the sides of the base with the mycelial hyphae, but in the upper parts much septate and meandering so that the course of the hyphae is obscured.

240. **Microcallis Scutiae** Hansford, sp. nov.

Hyphae mycelii hyalinae, tenuissime pelliculosae 2–3 μ cr., indistincte septatae, irregulariter ramosae, parietes perithecii deorsum connatae. *Perithecia* hypophylla superficialia, laxe dispersa, obtuse conoidea vel depresso-globosa, atrobrunnea, circa 100 μ diam. et 80 μ alt., vertice poro irregulari pertusa. Paries perithecii 6–10 μ cr., ex strato externo atrobrunneo cellularum angulosarum circa 10 μ diam., et stratis 2–3 compressis hyalinis indistincte parenchymaticis compositus ; sursum cellulis paucis in processibus brunneis obtusis circa 20 × 5–10 μ, continuis vel 1-septatis, erectis productis. *Asci* basales, erecti aparahypsati numerosi clavato-ellipsoidei, sursum rotundati et incrassati (–8 μ), sessiles 8-spori, 30–40 × 12–15 μ. *Sporae* multiseriatae, hyalinae, clavulatae utrinque obtusae, leves, 1-septatae, non vel vix constrictae, rectae vel curvulae, 15–17 × 2–3 μ.

Hab. in foliis *Scutiae myrtinae*, Entebbe Road, Uganda, *Hansford 3432 p.p.*

The fungus appears to be entirely superficial, and produces no visible colony around the loosely scattered perithecia ; the wall of the latter is obscured in the lower part by the mycelial hyphae, which form its outermost layer.

241. **Phaeosaccardinula Jasmini** Hansford, sp. nov.

Plagulae hypophyllae effusae tenues vix perspicues. *Hyphae mycelii* exhyphopodiatae, dilute brunneae, indistincte septatae, haud constrictae. 2-3 μ cr., irregulariter ramosae, laxe reticulatae, adnatae, superficiales. *Setae myceliales* nullae. *Perithecia* irregulariter dispersa, atra, conica,

glabra vel setis 1–4 dispersis –100×4–5 μ, atrobrunneis septatis simplicibus rectis obtusis ornata, circa 150 μ diam. et alt., vertice irregulariter aperta; paries perithecii pluristratosus, circa 25 μ cr., durus, opace ater, ex cellulis 5–8 μ diam. incrassatis compositus, haud radiatus; membrana basalis unistratosa plectenchymatica, hyalina vel subhyalina, circa 34 μ cr., ad cuticulam adnata. *Asci* basales, late ellipsoidei vel saccati, sursum rotundati, sessiles vel nodoso stipitati, 8-spori, aparaphysati, circa 60×30 μ. *Sporae* conglobatae, brunneae, muriformes, ellipsoideae, leniter constrictae, transverse 3–5-septatae, longitudinaliter 1-septatae, circa 20×10 μ.

Hab. in foliis *Jasmini dichotomi*, Entebbe Road, Uganda, *Hansford 2954* (typus), *3199*, *3234*, *3406*.

This is a very difficult fungus to place; its habit is exactly that of other Chaetothyriaceae, with thin pelliculose, scarcely visible mycelium, which often completely encloses the glands of the leaf with a thin layer of pseudoparenchyma, and fills the stomata with small plugs of mycelium, but neither penetrates the cuticle nor the leaf through the stomata. The perithecia are conoid and stromatic in texture, with a rather thick, hard black upper wall, opening by an irregular pore lined with periphyses; at the base the wall merges into the mycelium. The basal wall is composed of hyaline to pale olive plectenchyma, not conspicuously radiate, flat and closely adnate to the cuticle. The nucleus of the perithecium is at first parenchymatous, but the cells dissolve into mucus as the asci develop and no true paraphyses are present. The distinction between upper and lower walls indicates affinity with Microthyriaceae, but the upper wall is not radiate, even at the edges.

242. **Cocconia Macarangae** Hansford, sp. nov.

Stromata epiphylla orbicularia superficialia atra, usque ad 5 mm. diam., primo levia, dein concentrice rugosa, deorsum pluries affixa; hypostroma atrum, subcuticulare vel epidermale, usque ad 50 μ diam. et 50 μ alt., deorsum in hyphis hyalinis vel subhyalinis, intercellularibus, flexuosis, ramosis, septatis 2–5 μ cr. dissolutum. *Mycelium* liberum nullum. *Loculi* annulati, usque ad 150 μ alt. et basi ad 250 μ cr.; paries pluristratosus, usque ad 20–30 μ cr., superne apertione 50 μ lat. longitudinaliter pertusus, ex hyphis radiantibus 4–7 μ cr., septatis (cellulis 8–15 μ long.) compositus. *Membrana basalis* circa 20 μ cr., pluristratosa, meandrice plectenchymatica, extus olivacea vel brunneola, intus subhyalina. *Asci* numerosi, basales erecti, clavato-ellipsoidei, sursum rotundati et incrassati (–8 μ), deorsum attenuato-stipitati, 8-spori, 70–95×20–25 μ. *Sporae* 2–3-seriatae vel conglobatae, brunneae, clavato-ellipsoideae, leves, utrinque obtusae 22–26×9–11 μ, 1 septatae, leniter constrictae, cellula superiore crassiore breviore subglobosa.

Hab. in foliis *Macarangae Schweinfurthii*, Mukono, Kiagwe, Uganda, *Hansford 2962 p.p.* (Fig. 6.)

The external ascostroma is connected to the leaf at many points, either by single hyphae penetrating the cuticle and forming small dark hypostromata in the epidermis and beneath the cuticle, or by pseudoparenchymatous dark hypostromata connected direct and up to 40 μ diam. From these dark hypostromata loose subhyaline to hyaline hyphae

penetrate the intercellular spaces of the palisade tissue, occasionally deeper into the mesophyll; these hyphae are much branched in an irregular manner and septate at short intervals, not forming haustoria in the host cells, but causing these to turn brown in their immediate vicinity. The

FIG. 6.—*Cocconia Macarangae* :—Transverse section. × 500.

upper wall of the annular loculi is rather thick, hard and stromatic, consisting of several layers of radiate dark brown to black, thick-walled hyphae. The loculus opens by an irregular longitudinal slit all round

the sterile centre of the stroma, exposing the slimy contents. The asci are formed on a basal tissue of loose meandering hyaline hyphae, among numerous filiform to clavulate paraphyses, which are septate and often slightly coloured towards the tip, simple. The whole interior of the loculus eventually fills with mucus, and on the surface the remains of the apical cells of the outer wall float.

FIG. 7.—*Schneepia Cissampeli* :—Transverse section ; germinating ascospores ; hypha with hyphopodia. All × 500.

243. **Schneepia Cissampeli** Hansford, sp. nov.

Stromata superficialia epiphylla orbicularia applanato-discoidea, 1–1·5 mm. diam. ; loculi plures radiantes lineares, usque ad 700 × 200 μ, recti vel irregulariter curvuli, usque ad 75 μ alt. Paries atrobrunneus, circa 10 μ cr., radiatus, margine subfimbriatus et in hyphis mycelii transiens. *Mycelium* brunneum superficiale ex hyphis ramosis 6–7 μ cr., septatis (cellulis 20–35 μ longis) hyphopodiatis compositum. *Hyphopodia* pauca, unilateralia vel alternata, hemisphaerica, 11–14 μ diam. *Hypostroma*

in cellulas epidermidis productum, ex cellulis hyalinis vel dilute olivaceis, globosis, parenchymaticis compositum. *Asci* basales ovati 8-spori, circa $50 \times 30\,\mu$, antice rotundati, basi attenuati, sessiles vel breviter nodoso stipitati. Paraphyses evanescentes mucosae. *Sporae* conglobatae, atrobrunneae, ellipsoideae utrinque rotundatae, leniter clavulatae, 1-septatae leniter constrictae, crasse verrucosae, $21–25 \times 12–13\,\mu$, cellula superiore crassiore.

Hab. in foliis *Cissampeli mucronatae*, Kawanda, Uganda, *Hansford 2848* (typus), *3276*. (Fig. 7.)

The spores germinate on the upper leaf surface and form a single hyphopodium near the septum ; this sends out a fine filament to penetrate the cuticle below, forming a "haustorium" in the underlying epidermal cell. The haustorium enlarges and becomes septate, passing into neighbouring epidermal cells direct through the thin parts of the lateral walls, in each cell the internal mycelium thus formed being closely adnate to the outer wall. Simultaneously the external mycelium develops, forming a few hyphopodia, each of which repeats the process of developing an internal mycelium. The original connections through the cuticle are enlarged to become small dark hypostromata in cuticle and epidermis, usually $20–40\,\mu$ diam., filling the disorganised host cells and connected with the developing fructification. The latter thus becomes connected with the internal mycelium at many points. The external stroma develops in a manner similar to that of *Lembosia*, beneath the hyphae of the external mycelium and beginning as a radiate plate of dark cells centrally connected with the internal mycelium. As these plates develop they become fused to form the single ascostroma of the mature fructification. Each loculus remains with a surface layer of radiate hyphae laterally agglutinated and septate into short cells, beneath which there are 2–3 layers of dark thick-walled rectangular cells less conspicuously radiate, the whole upper wall about $10\,\mu$ thick. At the edges the surface layer is slightly fimbriate, merging into the external mycelium. The basal wall of each loculus consists of hyaline to subhyaline small cells and hyphae, not distinctly radiate, and the asci develop from a loose hyaline plectenchyma resting on this basal membrane. The asci are at first paraphysate but the paraphyses later become mucose diffluent. The fungus can be regarded as a *Lembosia* in which the hyphopodia develop an internal mycelium instead of single haustoria.

244. Echidnodes Capparidis Hansford, sp. nov.

Plagulae epiphyllae tenues leves, aegre perspicues, usque ad 3 mm. diam. *Mycelium* ex hyphis dilute brunneis, indistincte septatis, $3\,\mu$ cr., irregulariter ramosis et laxe reticulatis compositum, hyphis primariis subrectis. *Hyphopodia* pauca in hyphis primariis evoluta, laxe dispersa, alternata vel unilateralia continua, hemisphaerica vel clavata, integra, $6–8 \times 5\,\mu$, quidque laminam subcuticulare hyalinam $30\,\mu$ diam. cellularum $5–10 \times 2–5\,\mu$ efficiens. *Thyriothecia* laxe dispersa, discreta vel 2–3-connata et X-vel Y-formia, singulis ellipticis, atra, leniter convexa, $200–400 \times 100–120\,\mu$, margine non vel leniter fimbriata. Paries superior ex hyphis opace atrobrunneis radiantibus $4–5\,\mu$ cr. compositus, cellulis centralibus subcubicis, marginalibus usque ad $7\,\mu$ longis. Paries inferior

indistinctus. *Asci* numerosi, late ovati, sessiles, 8-spori, 30–38 × 22–27 μ, sursum leniter incrassati. *Sporae* cinglobatae, oblongae utrinque obtusae, 1-septatae, leniter constrictae, leves, 17–20 × 9 μ, cellula inferiore leniter angustiore, superiore subglobosa, ambabus dilute brunneis.

Hab. in foliis *Capparidis Afzelii*, Entebbe Road, Uganda, *Hansford 3484*.

Each hyphopodium forms a fine filament penetrating the cuticle and enlarging to form a flat thin plate of radiating hyaline small cells, closely adnate to the outer wall of a single epidermal cell; there is no further penetration of the host, though on the surface each hyphopodium becomes more or less surrounded by a knot of short branches of the hyphae. The asci are scattered among numerous erect simple paraphyses 4–5 μ wide, rather thick-walled and forming a close tissue of hyaline to pale brownish coarse threads; these may be sterile or merely collapsed asci. The fungus is placed in *Echidnodes* rather than in *Lembosia* on account of the absence of true haustoria.

245. **Hysterostoma Colae** Hansford, sp. nov.

Plagulae amphigenae orbiculares atrae leves densae, usque ad 3 mm. diam., saepe numerosae et subconfluentes. *Mycelium* ex hyphis atro-brunneis, irregulariter ramosis, laxe reticulatis flexuosis, indistincte septatis, 3–4 μ cr. compositum *Hyphopodia* nulla. *Conidia* numerosa, singula, atrobrunnea, cylindracea, sursum rotundata, basi truncata, verrucosa, 0–5 septata, non vel vix constricta, 10–50 × 9–11 μ, terminalia in ramulis mycelii. *Hypostroma* subcuticulare, unistratosum, ex hyphis radiantibus flexuosis 1·5–3 μ cr., indistincte septatis, atrobrunneis, marginem versus pallidioribus, lateraliter dense agglutinatis compositum. *Hyphae* superficiales hypostroma excedentes at pluries connexae. *Haustoria* coralloidea in cellulis epidermalibus evoluta. *Thyriothecia* dispersa vel dense aggregata, subconfluentia, primo erumpentia demum superficialia, atra, glabra, usque ad 200 μ diam. et circa 50 μ alt., irregulariter ex poro centrali dehiscentia, postremo late aperta et reliquiis parietis superiori circumdata. Membrana basalis unistratosa dilute olivacea, ex hyphis sinuoso-radiantibus septatis composita, 5–10 μ cr., intus in nucleo hyalino parenchymatico mucoso-diffluenti transiens. Paries superior circa 8 μ cr., unistratosus, ex hyphis radiantibus, opace atro-brunneis, 4–5 μ cr. (cellulis 5–10 μ longis) compositus, intus in nucleo transiens. Thyriothecium inferne pluries affixum. *Asci* basales, late clavato-ellipsoidei, sessiles vel nodoso stipitati, sursum rotundati et incrassati (–5 μ), 8-spori, aparaphysati, usque ad 50 × 18 μ. *Sporae* 2-seriatae, oblongae, utrinque obtusae, brunnescentes, 1-septatae, leniter constrictae, 17–20 × 8·5–9·5 μ, leves; cellula superiore saepe leniter crassiore.

Hab. in foliis *Colae natalensis*, Amanzimtoti, Natal, South Africa, Herb. Pretoria 1636 (typus); Mt Edgecombe, Natal, 11558; Umtenanene, Natal, 13066

The subcuticular plate of dark radiating flexuous hyphae forms the colony as seen by the naked eye, the superficial mycelium being very thin and loosely reticulate, extending beyond the edge of the hypostroma, and connected to it at irregular intervals. The conidia are produced as short lateral branches on the external hyphae, and when young closely

simulate hyphopodia. Haustoria are formed in many epidermal cells and each is connected with the subcuticular hyphae. The whole interior of the thyriothecium is filled at first with a delicate tissue of hyaline parenchyma, which dissolves into mucus as the asci develop.

246. **Asterinella entebbeensis** Hansford, sp. nov.

Plagulae epiphyllae, usque ad 2 mm. diam., orbiculares vel irregulares, subdensae, atrae, leves. *Mycelium* ex hyphis atrobrunneis, sinuosis

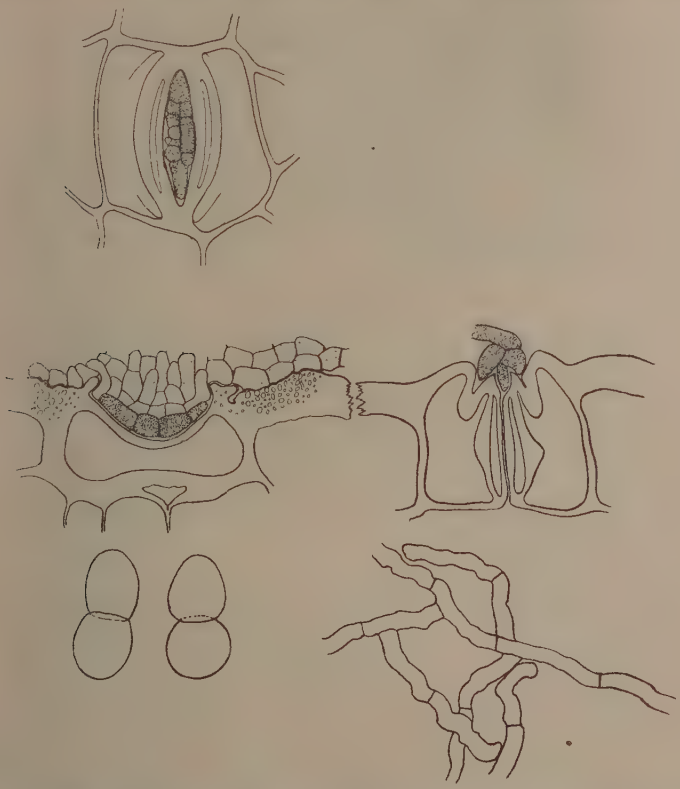

FIG. 8.—*Asterinella entebbeensis* :—Stomatal plug in surface view and in section ; mycelial mat lying over the transformed cuticle ; hyphae from the superficial mycelium ; two ascospores.

vel flexuosis, 4–6 μ cr., irregulariter ramosis, dense recticulatis, exhyphopodiatis compositum. *Thyriothecia* dense dispersa, rotundata 150–240 μ diam., saepe subconnata, atra, levia, margine crenata, in maturitate irregulariter aperta. Paries superior atrobrunneus, ex hyphis 3–6 μ cr. radiantibus compositus ; paries inferior tenuis indistinctus. *Asci* 157 SESS. (1944–5).

basales, globosi, sessiles, 8-spori, circa 50 μ diam. *Sporae* conglobatae, oblongae utrinque rotundatae, atrobrunneae, leves, 1-septatae, fortiter constrictae, 32–37 × 16–19 μ, cellulis subaequalibus globosis. *Paraphysoides* mucosae indistincte fibrosae (? reliquae nuclei parenchymatici).

Hab. in foliis *Loranthi* sp., Entebbe Road, Uganda, *Hansford 2821* (typus), *2903*.

No internal mycelium or haustoria were found produced by this fungus in the host; the superficial hyphae form small dark plugs in the outer stomatal cavities, but no further penetration was observed. The external mycelium causes a chemical change in the underlying cuticle, converting it to a swollen spongy guttulate layer. (Fig. 8.) [See note, p. 212.]

247. **Halbaniella Paulliniae** Hansford, sp. nov.

Plagulae hypophyllae tenues leves, primo griseo-atrae, demum fulvescentes, effusae irregulares, saepe numerosae et confluentes. *Mycelium* superficiale ex hyphis dense reticulatis, irregulariter ramosis, dilute olivaceis, 2·5–4 μ cr., tenuiter tunicatis, indistincte septatis, exhyphopodiatis compositum. *Mycelium* intramatricale hyalinum, sub cuticula folii evolutum, ex plagulis unistratosis irregularibus 5–15 μ diam. compositum, cellulis 3–4 × 2–3 μ; haustoria nulla. *Thyriothecia* dense stipata, discreta, glabra, fulva, plus minusve discoidea, 80–130 μ diam., 40–60 μ alt.; paries superior ex hyphis radiantibus compositus, margine crenatus haud fimbriatus, irregulariter stellatim dehiscens et cellulis secedentibus; membrana basalis hyalina indistincte radiata, tenue. *Asci* basales numerosi erecti ellipsoidei, sursum rotundati, subsessiles vel nodoso-stipitati, 8-spori, 40–55 × 12–17 μ. *Ascosporae* parallelae, clavulato-cylindraceae, dilute flavidae, utrinque rotundatae, 5-septatae, haud constrictae, leves, 40–45 × 3–4·5 μ. *Pycnidia* peritheciis consimilia, poro apicali pertusa, brunnea, glabra; pycnosporae hyalinae fusoideae continues utrinque attenuato-rotundatae, leves, rectae vel lenissime curvulae, 10–12 × 2–3 μ.

Hab. in foliis *Paulliniae pinnatae*, Entebbe Road, Uganda, *Hansford 3135 p.p.* (typus), *3141, 3168, 3241*.

The colonies are always hypophyllous and are often confluent over large areas of the leaf, at first grey-brown, later yellow-brown as the thyriothecia are formed. The superficial mycelium connects by short lateral branches through the cuticle with small plates of hyaline parenchyma beneath the cuticle, extending over one to three epidermal cells; there is no other penetration of the host and no haustoria are formed; no infection of the guard cells of the stomata has been seen. The thyriothecia begin as small radiate plates of hyphae below those of the external mycelium and later become almost globose to thick discoid; the upper wall retains distinct traces of its original radiate structure around the edge, but after dehiscence has occurred little remains of the central portion, the whole interior being filled with a mass of yellowish mucus, surrounded by the remains of the upper wall. The asci are enclosed in the mucus developed from the original hyaline parenchymatous nucleus, and their contents are stained bright to greenish yellow. The short lateral branches of the external hyphae often simulate hyphopodia, but are not differentiated as such, and are very variable in length and shape.

248. Hariotula Pavettae Hansford, sp. nov.

Plagulae amphigenae 3–4 mm. diam., albidae, in centro atrascentes, orbiculares, leves. *Mycelium* sub cuticulam folii evolutum, ex hyphis hyalinis septatis ramosissimis 6–8 μ cr. (cellulis 10–15 μ long.) compositum. *Hyphopodia*, setae et haustoria nulla. *Hyphae* superficiales nullae. *Thyriothecia* dense aggregata, atra, dimidiata, usque ad 80 μ diam.; paries superior radiatus, ex hyphis atrobrunneis 2–4 μ cr., cellulis usque

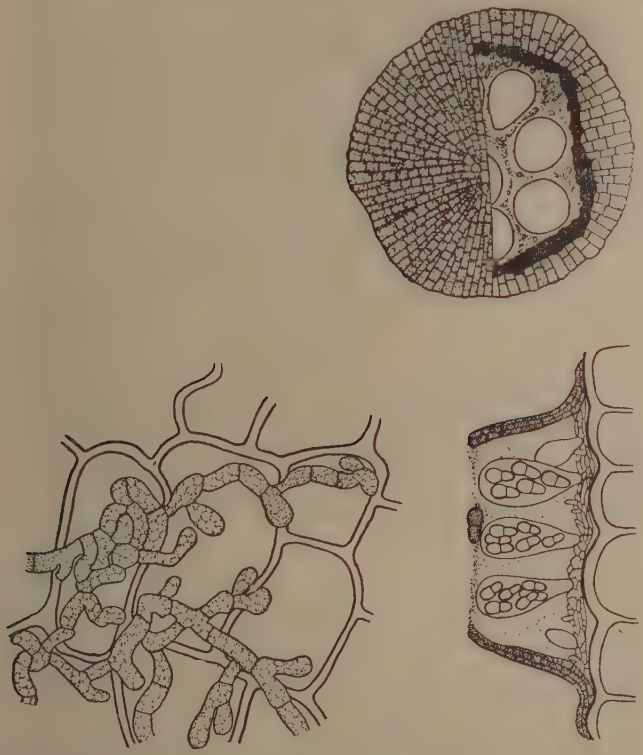

Fig. 9.—*Hariotula Pavettae*:—Thyriothecium, surface view, before and after dehiscence; transverse section of thyriothecium; internal mycelium in horizontal section. All × 550.

ad 10 μ longis, compositus. Hypothecium 1–3-stratosum, hyalinum, indistincte radiato-plectenchymaticum, 3–4 μ cr. Thyriothecia stellatim dehiscentia, demum late aperta. *Asci* basales, aparaphysati, late clavati, sursum rotundati, deorsum attenuati et breviter nodoso-stipitati, 25–30 × 10–15 μ, 8-spori. *Sporae* 2–3-seriatae, brunneae, oblongae utrinque obtusae, 1-septatae, leniter constrictae, leves, 10 × 4 μ, cellula superiore crassiore.

Hab. in foliis *Pavettae Oliverianae*, Entebbe Road, Uganda, ***Hansford 2899*** (typus), ***3062, 3132, 3452.***

This fungus is common, always on the same host, forming whitish rounded spots on both surfaces of the leaf, partly obscured beneath by the tomentum, becoming black in the centre as the thyriothecia develop. The subcuticular mycelium is difficult to find in transverse sections of the leaf, but in those cut parallel to the surface and stained with Methyl Blue or Cotton Blue, it is quite distinct. The hyphae are hyaline, irregularly and closely branched, towards the centre forming a plectenchymic plate one cell thick. No further penetration of the leaf was found and no haustoria developed ; the mycelium breaks through the cuticle to form the superficial thyriothecia, each centrally attached. The white appearance is due to the separation of cuticle and outer wall of the epidermis. (Fig. 9.)

249. Microthyrium Scutiae Speg. in Anal. Mus. Nac. Buenos Aires, xxiii, p. 79, 1912.

On *Scutia myrtina*, Entebbe Road, Uganda, ***Hansford 3430.***

Thyriothecia hypophyllous, closely scattered with no evident mycelium between, black, 150–200 μ diam., smooth, margin crenate or subentire, central pore irregular, about 10 μ diam. Upper wall of dark brown radiating hyphae 1–3 μ wide, the cells 5–10 μ long, closely compacted. Asci aparaphysate, clavulate rounded at the apex, subsessile, 8-spored, when mature about 40×8–$10\ \mu$. Spores obliquely 2–3-seriate, hyaline, fusoid with acute ends, or the upper end subobtuse, straight or slightly bent, 1-septate near the middle, not constricted, smooth, 10–$13 \times 1{\cdot}5\ \mu$. Lower wall of thyriothecium hyaline, very indistinct. Details of parasitism have not been worked out.

250. **Clypeolella Gymnosporiae** Hansford, sp. nov.

Plagulae amphigenae tenues atrae leves orbiculares, usque ad 8 mm. diam., vel numerosae confluentes effusae. *Mycelium* ex hyphis dilute vel intense atrobrunneis, 4·5–6 μ cr., septatis (cellulis 20–30 μ longis) irregulariter ramosis, dense intertextis, flexuosis vel sinuosis compositum. *Hyphopodia* laxe irregulariter dispersa, unilateralia vel alternata, haud numerosa, hemisphaerica vel subglobosa, integra, continua 8–10×7–$11\ \mu$; ramuli numerosi mycelii exhyphopodiati. *Conidia* mycelialia biformia : (a) *Sarcinella* sp. : opace atrobrunnea levia subglobosa, 20–35 μ diam., breviter stipitata, ex cellulis 6–15 composita, ad septa leniter constricta ; (b) *Helminthosporium* sp., falcata utrinque attenuata, apice rotundata, basi truncata, 3-septata, vix constricta, 35–50×8–$11\ \mu$, olivacea utrinque pallidiora, singulariter in sterigmatibus brevibus producta, ramis conidiiferis mycelii repentibus 0–2-septatis. *Thyriothecia* sub hyphis mycelii orta, radiata, orbicularia 80–150 μ diam., 30–50 μ alt., discreta vel 2–3-connata, olivacea pallidescentia ; *membrana basalis* hyalina indistincta ; *membrana tegens* convexula, dilute olivacea, 1-stratosa ex hyphis radiantibus 5–7 μ cr. composita (cellulis 4–8 μ longis), margine haud fimbriata ; in maturitate irregulariter dehiscentia et cellulis centralibus diffluentibus. *Asci* usque ad 20, basales, globosi vel ovati, sessiles, 8-spori, 30–35 μ diam., aparaphysati. *Sporae* conglobatae, oblongae

utrinque rotundatae, 1-septatae, constrictae, leves, 18–23 × 7–11 μ, brunnescentes, cellulis aequalibus vel superiore leniter crassiore.

Hab. in foliis *Gymnosporiae buxifoliae*, Entebbe Road, Uganda, *Hansford 3128 p.p.* (typus), *3310, 3418, 3371.*

The thyriothecia are radiate in structure, dehiscing by irregularly stellate fissures, the centre rapidly breaking up and exposing the asci.

251. **Clypeolella ugandensis** Hansford, sp. nov.

Plagulae amphigenae sed praecipue hypophyllae, tenues, atrae, numerosae saepe confluentes. *Mycelium* ex hyphis dense reticulatis, brunneis, subrectis vel sinuosis, 4·5–6·5 μ cr. (cellulis 25–35 μ longis) irregulariter ramosis compositum. *Hyphopodia* dispersa, alternata vel unilateralia, continua, piriformia vel sublobulata, apice nodoso-attenuata, 9–15 × 8–12 μ. *Conidiophora* 0-2-septata, repentia, 10–40 μ longa, simplicia vel furcata, cellulis singulis sterigma unum cylindraceum curvulum 4–15 × 2 μ superne gerentibus. *Conidia* singula, terminalia, fusoideo-ellipsoidea, curvata, apice rotundata, basi ad hilum planum attenuata, (2)–3-septata, haud constricta, brunnea utrinque pallidiora, 30–37 × 15–19 μ, cellulis 1–2-mediis multo majoribus. *Thyriothecia* dense dispersa vel 2–3-aggregata subconnataque, orbicularia 300–600 μ diam., glabra, olivacea pallidis centia, 50–70 μ alt.; membrana basalis hyalina ex hyphis tenuiter tunicatis, irregulariter radiantibus indistinctis composita; stratum tegens convexum, pellucide olivaceum, ex hyphis radiantibus 3–5·5 μ cr. (cellulis 5–15 μ longis) compositum, margine integrum, plus minusve crenatum, in maturitate irregulariter stellatim dehiscens, demum in centro diffluens. *Asci* usque ad 20, basales, aparaphysati, globosi vel ovati, sessiles, 8-spori, 40–55 × 35–40 μ. *Sporae* conglobatae, oblongae utrinque rotundatae, 1-septatae, leniter constrictae, leves, 26–32 × 12–15 μ, cellulis subaequalibus vel cellula superiore leniter crassiore, brunnescentes.

Hab. in foliis Rubiacearum spec. indet. (? *Pavettae*), Entebbe Road, Uganda, *Hansford 3130.*

252. **Asterina bukobensis** Hansford, sp. nov.

Plagulae dispersae tenues griseo-atrae, usque ad 5 mm. diam. *Mycelium* ex hyphis laxe reticulatis radiantibus, subrectis vel sinuoso-undulatis, 3–5 μ cr. (cellulis 20–40 μ longis) brunneis, irregulariter vel opposite ramosis compositum. *Hyphopodia* terminalia, demum aucto hypharum lateralia, semper solitaria, castaneo-brunnea, irregulariter dispersa, 1-septata, 15–22 μ longa, cellula inferiore saepe crassiore, 10–14 × 8–13 μ, superiore 5–8 × 5–10 μ, utraque versiformi, saepe sublobata vel subglobosa, inferne poro minuto pertusa. *Thyriothecia* dense dispersa, discreta, rotundata, usque ad 500 μ diam., atra; membrana basalis hyalina vel subhyalina, indistincta; stratum tegens convexum ex hyphis subopace atrobrunneis, radiantibus 3–4 μ cr., cellulis usque ad 10 μ longis compositum, margine fimbriatum, hyphis fimbriarum tortuosis indistincte septatis, 3–4 μ cr., usque ad 120 μ longis. *Asci* basales, ex centro radiantes, cylindraceo-clavati, usque ad 120 × 35 μ, breviter nodoso-stipitati, sursum rotundati, 8-spori; paraphyses numerosae hyalinae ramosae septatae 1–1·5 μ cr., sursum clavulatae, persistentes. *Sporae* 2-seriatae vel oblique 1-seriatae, ovatae vel ellipsoideae, utrinque rotundatae

atro-brunneae, leves, 1-septatae, constrictae, 35–41 × 17–20 μ, cellula superiore subglobosa, cellula inferiore leniter angustiore, 10–15 μ cr., basim versus attenuata.

Hab. in foliis *Eugeniae bukobensis*, Entebbe Road, Uganda, *Hansford 2943* (typus), *3250*.

The colonies consist of radiating brown hyphae with the branches at very acute angles ; the hyphopodia are at first terminal on the hyphae, becoming lateral by growth of the cell immediately behind them, which either forms one or two branches, leaving the hyphopodium lateral or between two close branches. Each hyphopodium is darker brown than the hyphae and consists of two cells of very variable shape, from subglobose to irregular, and each with a small pore in the lower surface from which a haustorium in the epidermis originates. The asci are in a central group from which they radiate upwards and outwards ; they differ in shape from those typical of the genus and have numerous persistent clavate septate paraphyses. The germination of the spores is peculiar : the large upper cell empties and collapses, while the lower grows out at the base into a hyphopodium at the end of a short hypha, which grows later to form the mycelium.

253. **Asterina cinnamomicola** Hansford, sp. nov.

Plagulae hypophyllae, usque ad 8 mm. diam., griseo-atrae, tenuissimae, leves. *Mycelium* ex hyphis brunneis sinuosis 2–3 μ cr., indistincte septatis, irregulariter vel opposite ramosis, laxe reticulatis compositum. *Hyphopodia* alternata, unilateralia vel opposita (hyphis numerosis exhyphopodiatis), laxe dispersa, continua, concolorata, hemisphaerica vel sinuoso-lobata, saepe in processo sinuoso-cylindraceo terminali vel laterali producta tum irregulariter conoidea, 4–9 × 3–5 μ. *Thyriothecia* dense stipata, discreta vel 2–3-connata, rotundata, atra, 80–130 μ diam. ; membrana basalis indistincta ; stratum tegens convexum, ex hyphis atrobrunneis radiantibus 2·5–4 μ cr., cellulis usque ad 7 μ longis compositum, in centro opacum, margine breviter fimbriatum, hyphis fimbriarum tortuoso-radiantibus usque ad 30 μ longis, stellatim dehiscens, late apertum et ascostratum detegens. *Asci* numerosi, in ordine matures-centes, aparaphysati, sessiles, globosi vel late ovati, 8-spori 20–25 × 20 μ. *Sporae* conglobatae, atrobrunneae, oblongae utrinque obtusae, 1-septatae, constrictae, 13–16 × 6–7 μ, episporio verrucoso vel echinulato, cellula superiore non vel lenissime crassiore.

Hab. in foliis *Cinnamomi* spec., Ceylon, Herb. Peradeniya 5109.

254. Asterina capparidicola Doidge in Bothalia, iv, p. 311, 1942.

On *Capparis eleagnoides*, Ruzumbura, Kigezi, Uganda, *Hansford 2166*.

255. Asterina capparidis Syd. & Butl. in Ann. Myc., ix, p. 390, 1911.

On *Capparis* sp., Uganda, *Hansford 1922*, *2082*, *2882*, *3402*.

256. **Asterina Chlorophorae** Hansford, sp. nov.

Plagulae amphigenae dispersae orbiculares vel irregulares, tenues, atrae, leves, usque ad 5 mm. diam. *Mycelium* laxe reticulatum, ex hyphis atrobrunneis, undulatis, interdum subtorulosis, rarius subrectis,

3–4 μ cr. (cellulis 20–30 μ longis) irregulariter ramosis compositum. *Hyphopodia* alternata vel unilateralia, rarius opposita, numerosa, 1-septata, erecta vel plus minusve antrorsa, recta vel plerumque curvula, rarius hamata vel symmetricalia, 9–19 μ longa ; cellula basali cylindracea 2–9 × 3–4 μ, cellula apicali versiformi, subovata vel clavata, cylindracea vel sublobata, recta vel curvata, 4–8 μ cr. *Thyriothecia* dispersa numerosa discreta, rarius 2-connata, rotundata, 80–120 μ diam. ; membrana basalis hyalina vel subhyalina, indistincta ; stratum tegens convexum atro-brunneum subopacum, ex hyphis radiantibus 3–4 μ cr. (cellulis 4–7 μ longis) compositum, stellatim dehiscens, margine crenatum vel sub-fimbriatum, hyphis paucis tortuosis exhyphopodiatis brunneis usque ad 30 × 3 μ circumdatum. *Asci* circa 10, basales, globosi vel late ovati, circa 30 μ diam., 8-spori, sessiles. *Sporae* conglobatae, atrobrunneae, oblongae utrinque rotundatae, 1-septatae, constrictae 15–18 × 7·5–9 μ, cellulis subaequalibus, episporio subtiliter punctata. *Pycnidia* thyrio-theciis consimilia, 60–100 μ diam. ; conidia atrobrunnea continua, ovata vel piriformia, 12–16 × 8–13 μ, zona hyalina nulla.

Hab. in foliis *Chlorophorae excelsae*, Kiterera, Busoga, Uganda, *Hansford 2831* (typus), *3147*.

257. Asterina clausenicola Doidge in Trans. R. Soc. South Africa, VIII, p. 263, 1920.

On *Clausena anisata*, Entebbe Road, Uganda, *Hansford 2590*, *3190*, *3413*.

258. **Asterina entebbeensis** Hansford, sp. nov.

Plagulae epiphyllae atrae tenues leves orbiculares, usque ad 5 mm. diam., rarius etiam hypophyllae. *Mycelium* ex hyphis atrobrunneis 2·5–4·5 μ cr., leniter sinuoso-undulatis vel irregulariter flexuosis, irregulariter ramosis, subdense anguloso reticulatis (cellulis 20–40 μ longis) compositum. *Hyphopodia* modice numerosa, irregulariter dispersa (hyphis paucis exhyphopodiatis) unilateralia vel alternata, plerumque erecta, 1-septata, recta vel subcurvata, 10–15 μ longa, cellula basali breviter cylindracea, recta, 2–5 × 3–4·5 μ, cellula apicali cylindraceo-clavata, recta vel curvula, subintegra vel irregulari, raro 2–3-lobata, versiformi, 9–12 × 4–9 μ. *Thyriothecia* dispersa, discreta vel 2–3-connata, rotundata, atra, levia 120–160 μ diam. ; membrana basalis subhyalina, indistincta ; stratum tegens convexum, radiatum, ex hyphis atro-brunneis 3–5 μ cr., cellulis 4–10 μ longis compositum, in centro opacum, margine fimbriatum, hyphis fimbriarum usque ad 70 μ longis, sinuosis vel tortuosis, exhyphopodiatis, 2·5–4 μ cr., stellatim dehiscens et cellulis centralibus secedentibus. *Asci* usque ad 20–25, basales sessiles, ovati vel subglobosi, 8-spori, 30–40 × 25–35 μ. *Sporae* conglobatae atrobrunneae oblongae utrinque obtusae, 1-septatae, constrictae, 17–19 × 7–8 μ, cellula superiore lenissime crassiore, episporio granuloso vel verrucoso. *Pycnidia* thyriotheciis consimilia ; conidia ovata vel piriformia, atrobrunnea, zona subhyalina in medio praedita, levia, 15–18 × 8–9 μ.

Hab. in foliis *Clerodendri* spec., Entebbe Road, Uganda, *Hansford 3119* (ypus), *3408*.

259. Asterina erysiphoides Kalchbr. & Cooke var. **delicata** Hansford, var. nov.

Plagulae hypophyllae tenues atrae leves, orbiculares vel irregulares, usque ad 5 mm. diam. *Mycelium* ex hyphis sinuosis vel tortuosis, dilute brunneis, 2·5–3·5 μ cr. (cellulis 20–30 μ longis) irregulariter ramosis, rotundato reticulatis compositum. *Hyphopodia* alternata, unilateralia vel opposita, plerumque 1-septata, 10–28 μ longa, cellula basali cylindracea, curvata vel tortuosa 5–18 × 2·5–3 μ, cellula apicali versiformi, sinuoso vel fortiter 2–3-lobata 8–10 × 4–9 μ. *Thyriothecia* dispersa, discreta vel raro 2–3-connata, 80–100 μ diam., atra convexa, membrana basali tenui, hyalina vel dilute olivacea, ex hyphis radiantibus 2·5–3 μ cr. composita ; stratum tegens convexum, atrobrunneum, ex hyphis radiantibus 2·5–3·5 μ cr., cellulis circa 5 μ longis compositum, margine laxe fimbriatum, hyphis fimbriarum tortuosis exhyphopodiatis usque ad 50 μ longis, stellatim usque ad marginem dehiscens. *Asci* usque ad 8, ovati, sessiles, 30–35 × 25–30 μ, 8-spori, aparaphysati. *Sporae* conglobatae, brunneae, oblongae utrinque obtusae, 1-septatae fortiter constrictae, 18–25 × 10–12 μ, episporio minute granuloso vel echinulato, cellula inferiore 8–10 μ cr. *Pycnidia* thyriothecii consimilia, 60–80 μ diam., conidia brunnea, ovata vel piriformia, levia, 16–20 × 10–14 μ, zona nulla.

Hab. in foliis *Jasmini dichotomi*, Entebbe Road, Uganda, *Hansford 3201.*

The thyriothecia develop a tough hyaline mucus in which the ripe asci are embedded, and then resemble a *Schiffnerula*, with the mucus surrounded by the more or less erect remains of the upper wall. The asci are separated by sterile 'paraphyses,' rather wide, thick-walled and mucose, variously contorted and possibly the remains of collapsed asci. The continuous hyphopodia are few, and resemble the head cells of the others ; in some cases a single stalk cell bears two head cells.

260. Asterina fimbriata Kalchbr. & Cooke in Grevillea, IX, p. 33, 1880.

On *Whitfieldia* sp., Entebbe Road, *Hansford 2366*, Uganda.

261. **Asterina Garciniae** Hansford, sp. nov.

Plagulae epiphyllae, orbiculares, atrae, leves, tenues, usque ad 5 mm. diam., dispersae. *Mycelium* ex hyphis brunneis, 3·5–5 μ cr. (cellulis plerumque 10–20 μ longis) flexuosis vel subtortuosis, irregulariter ramosis, laxe reticulatis compositum. *Hyphopodia* dispersa, in hyphis primariis evoluta, continua, unilateralia vel alternata, hemisphaerica, integra, 7–10 × 5–7 μ. *Thyriothecia* dense stipata, plerumque 2–3-connata et irregularia, singula rotundata, convexa, atra, 80–160 μ diam., membrana basali hyalina indistincta ; stratum tegens subopace atrobrunneum, ex hyphis radiantibus 4–5 μ cr., cellulis 4–12 μ longis compositum, margine plus minusve fimbriatum, hyphis fimbriarum exhyphopodiatis tortuosis usque ad 60 μ longis, stellatim dehiscens, cellulis centralibus secedentibus et ascos detegentibus. *Asci* numerosi, aparaphysati, ellipsoidei vel ovati, sessiles, sursum rotundati, 45–50 × 23–28 μ, 8-spori. *Sporae* brunneae, oblongae utrinque obtusae, 1-septatae, leniter constrictae,

leves, 18–23 × 10–12 μ, cellulis subaequalibus vel superiore leniter crassiore, utraque in medio zona indistincta pallidiori praedita.

Hab. in foliis *Garciniae mangostanae*, Ooty, South India, *Ramakrishna*, 6.3.1944, in Herb. Coimbatore.

262. Asterina loranthicola Syd. in Ann. Myc., xii, p. 266, 1914.
On *Loranthus usuiensis*, Entebbe Road, *Hansford 3498*.

263. Asterina radio-fissilis (Sacc.) Theiss., in Ann. Myc., x, p. 22. 1912.
On *Acalypha* spp., Uganda, Hansford 755, 1198, 1432, 1393, 1791, 1999, 1240, 2438, 2652, 3433 ; on *Erythrococca rigidifolium*, Hansford 3411 ; this was previously recorded (Contrib. no. iii) as *A. tenuis* Wint.

264. Asterina robusta Doidge in Bothalia, iv, p. 288, 1942.
On *Sersalisia edulis*, Entebbe Road, Uganda, *Hansford 2927*, *3186*, *3290*.

265. **Asterina Uvariae** Hansford, sp. nov.

Plagulae amphigenae plerumque epiphyllae, orbiculares, usque ad 4 mm. diam., rarius ad 10 mm., dispersae, raro confluentes ; epidermis folii atrascens. *Mycelium* ex hyphis radiantibus, subrectis vel leniter undulatis, atrobrunneis, 5–7 μ cr. (cellulis 30–40 μ longis), irregulariter ramosis, laxe reticulatis compositum. *Hyphododia* irregulariter dispersa (hyphis aliis exhyphopodiatis, aliis subdense hyphopodiatis), unilateralia vel opposita, raro 3-aggregata, obovata vel clavulato-cylindracea, erecta vel antrorsa, raro retrorsa, continua, 9–13 × 5–9 μ, sursum late rotundata. *Thyriothecia* singulariter dispersa vel 2-3-aggregata, plerumque discreta, raro 2-connata, orbicularia atra levia 90–140 μ diam. ; membrana basalis indistincta, hyalina vel subhyalina ; stratum tegens convexum, atrobrunneum vel opacum, ex hyphis radiantibus 3–5 μ cr., cellulis 3–7 μ longis compositum, stellatim in segmentes 4–9 dehiscens, cellulis centralibus secedentibus, margine fimbriatum, hyphis fimbriarum subrectis vel sinuosis, exhyphopodiatis septatis, usque ad 80 μ longis. *Asci* usque ad 10, ovati sessiles basales 8-spori 25–45 × 25–40 μ, in massa mucosa dilute flavida inclusi. *Sporae* conglobatae oblongae utrinque obtusae, subopace atrobrunneae, 1-septatae, constrictae 22–25 × 11–13 μ, cellula superiore lenissime crassiore, episporio dense verrucoso.

Hab. in foliis *Uvariae bukobensis*, Entebbe Road, Uganda, *Hansford 3121* (typus), *3286* ; in foliis *Popowiae mabirensis*, Uganda, *Hansford 3394*.

266. Asterolibertia megathyria Doidge in Bothalia, iv, p. 314, 1942.
Syn. *Asterinella ugandensis* Hansf. in Proc. Linn. Soc., cliii, p. 48, 1941.

The specimens *Hansford 1970* and *2457* on Rubiaceae, Uganda, the the type of *A. ugandensis* belong here ; the hyphopodia are intercalary, termed node cells by Arnaud and Doidge, and alternate fairly regularly with normal cells of the hyphae, from which they are distinguished by being slightly swollen, with a pore on their lower surface connecting with a single haustorium in the epidermis.

267. Asterolibertia Burchelliae Doidge, l.c., p. 315, 1942.
On *Tarenna pavettoides*, Uganda, *Hansford 2689*; on *Coffea eugenioides*, *Hansford 3088*, *2688*; on *Cremaspora africana*, *Hansford 3274*, *3399*.

268. **Loranthomyces ugandensis** Hansford, sp. nov.

Thyriothecia dispersa atra orbicularia discreta, depresso-conica, usque ad 150 μ diam., circa 30 μ alt., superne hyphis mycelii connexa, glabra; paries uni-stratosus brunneus, ex hyphis 4–5 μ cr. (cellulis 3–7 μ longis) ex centro basis et verticis radiantibus compositus, apice poro irregulari vel rotundato 20–40 μ diam. pertusus, sursum cellulis modice numerosis in hyphis dilute brunneis vel subhyalinis, subrectis vel tortuosis, septatis, 4–6 μ cr., radiantibus reflexis productis. *Asci* numerosi, ellipsoidei vel saccati, sursum rotundati inerassati (–3 μ), sessiles, 35–40 × 10–18 μ, 8-spori, aparaphysati, saepe curvati. *Sporae* oblique 2-seriatae, hyalinae, clavulatae, leves, 1-septatae, non vel vix constrictae, 14–18 × 4·5–6 μ, cellula superiore lenissime crassiore, utrinque obtusae.

Hab. in plagulis *Clypeolellae* et *Schiffnerulae* spec., Uganda, *Hansford 3128* (typus), *2641*, *3155*, *3183*, *3196*, *3246*, *3262*, *3225*, *3418*.

The host colony is usually covered with a loose cottony mycelium of subhyaline to hyaline hyphae 4–6 μ wide, septate, ramifying over and between those of the host. Beneath these mycelial hyphae are formed small radiate plates of pale olive hyphae about 50 μ diam., which darken, enlarge, become hollow and form the thyriothecium. The latter are attached to the mycelium only around the apex, by single cells of the wall. The asci appear to be in a basal layer, but this point needs confirmation by serial microtome sections.

269. **Mycolangloisia Englerulae** Hansford, sp. nov.

Mycelium in plagulis *Englerulae* parasitans, ex hyphis hyalinis vel subhyalinis, 2–3 μ cr., septatis, ramosis, flexuosis compositum, arachnoideum vel floccosum. *Setae myceliales* et *hyphopodia* nullae. *Thyriothecia* dense dispersa, sub hyphis mycelii efformata et eisdem juxta apicem solum connexa, atra, depresso-conoidea, rotundata, usque ad 220 μ diam., circa 80 μ alt.; paries unistratosus ex hyphis radiantibus 3–4 μ cr. (cellulis 6–13 μ longis) compositus, atrobrunneus, vertice hyphis mycelii et setis radiantibus ornatus, poro centrali irregulariter rotundato 15–30 μ diam. pertusus. *Setae perithecii* brunneae, subrectae, patentes, usque ad 100 × 3·5–4·5 μ, simplices, septatae, apice obtusae vel subacutae, paucacin hyphis mycelii transientes. *Asci* a paraphysati sessiles, ellipsoidei vel saccati, sursum rotundati leniter inerassati, 8-spori, circa 80 × 20 μ. *Sporae* 2–3-seriatae, hyalinae, ellipsoideae vel lenissime clavula ae, leves, 1-septatae, 25–28 × 5–6 μ, cellulis subaequalibus, utrinque rotundatae.

Hab. in plagulis *Englerulae Macarangae* in foliis *Macarangae Schweinfurthii*, Entebbe Road, Uganda, *Hansford 3126* (typus), *3392*.

The fungus forms a loose cottony mycelium of hyaline to pale yellow brown hyphae ramifying over the colony of the host. The thyriothecia are formed below the mycelium and remain attached only by a few hyphae around the apex, which may be almost parenchymatous and slightly papillate to very shortly cylindric. The remainder of the wall is of

uniform structure, of a single layer of brown hyphae radiating outwards from the apex and inwards towards the centre of the base. Among the mycelial hyphae at the apex are a number of radiating setae, darker than the hyphae.

270. **Mycolangloisia nitida** (Doidge) Hansf., comb. nov.

Syn. *Actinopeltella nitida* Doidge in Bothalia, 1, p. 216, 1924.

This was originally described as having no mycelium, but in some collections in Herb. Pretoria, pale olivaceous hyphae, closely adnate to those of the host, are present. There seems no reason to separate this generically from *Mycolangloisia*, though the peristomal setae apparently never become reflexed or elongated into mycelial hyphae.

271. **Phaeaspis nervicola** Hansford, sp. nov.

Mycelium tenuissime pelliculosum, ex hyphis subrectis dilute brunneis vel flavidis, exhyphopodiatis, 3–3·5 μ cr. (cellulis 10–15 μ longis) irregulariter ramosis, dense reticulatis compositum, hyphis secondariis meandrice-sinuosis, dilute flavidis vel subhyalinis, indistincte septatis, 1·5–2·5 μ cr. *Setae* nullae. *Thyriothecia* hypophylla, singulariter dispersa vel in greges laxe 2–3-aggregata, in nervis elevatis folii superficilia, atra, levia vel leniter rugulosa, nitida, elliptica, usque ad 280 μ long., 80–130 μ cr., circa 25 μ alt., adnata ; membrana tegens atrobrunnea, leniter convexa, ex hyphis sinuoso-reticulatis 2–3 μ cr., indistincte septatis composita, margine in pelliculam mycelii transiens ; membrana basalis hyalina, tenuis, ex hyphis subtilissimis reticulatis composita. *Asci* ellipsoidei vel saccati, sessiles vel nodoso stipitati, sursum rotundati, incrassati (–3 μ), 8-spori, 45 × 20 μ ; paraphyses numerosae filiformes evanescentes. *Sporae* 2–3 seriatae cylindraceae vel clavulatae, dilute olivaceae, 1-septatae, non vel vix constrictae, utrinque obtusae, 17–20 × 5–6·5 μ, cellula superiore interdum leniter crassiore.

Hab. in foliis *Macarangae Schweinfurthii*, Entebbe Road, Uganda, *Hansford 3126 p.p.*

Though 8 spores are apparently always formed in the asci, often only 4–6 reach maturity. The thyriothecia are scattered along the veins of the lower side of the leaf, almost completely hidden among the leaf hairs, and closely adnate. No penetration of the host was found.

272. **Micropeltis spiralis** Hansford, sp. nov.

Mycelium liberum non visum. *Thyriothecia* plerumque epiphylla dispersa orbiculata brunnea, margine pallidiora, 300–350 μ diam., levia, poro centrali pertusa ; membrana superior ex hyphis intricatis unistratosis septatis composita, margine pelliculosa ; membrana inferior indistincta. *Asci* pauci, saccati, sessiles, sursum attenuato-rotundati, incrassati (–8 μ) 8-spori, circa 150 × 50 μ ; paraphyses numerosae hyalinae filiformes 1 μ cr. *Sporae* spiraliter positae, saepe in ascis maturis 2–4, hyalinae, cylindraceae utrinque rotundatae, 11–17-septatae, usque ad 200 μ longae, cellulis mediis –14 μ cr., terminalibus –9 μ cr., omnibus subglobosis facile secedentibus, episporio mucoso.

Hab. in foliis *Artabotrydis nitidi*, Kazi, Kampala, Uganda, *Hansford* 157 sess. (1944–5).

2876 (typus): in foliis *Canthii vulgaris*, l.c., *Hansford 2884*, *3131*; in foliis *Ventilaginis africanae*, *Hansford 2931*; in foliis *Phialodisci* spec., *Hansford 3295*.

The spiral arrangement of the spores in the asci is very characteristic; in colour the thyriothecia differ from the typical species of *Micropeltis*, which are blue-black. The thyriothecia are easily detached from the leaf together with a rather narrow subhyaline marginal pellicle; no free mycelium was found between mature thyriothecia.

273. Clypeolum scutelliforme Rehm in Hedwigia, 1898, p. 322.

On *Ventilago africana*, Entebbe Road, Uganda, *Hansford 2923*; on *Trichilia* sp., l.c., *Hansford 2895* p.p.; on *Casearia Engleri*, l.c., *Hansford 3182*.

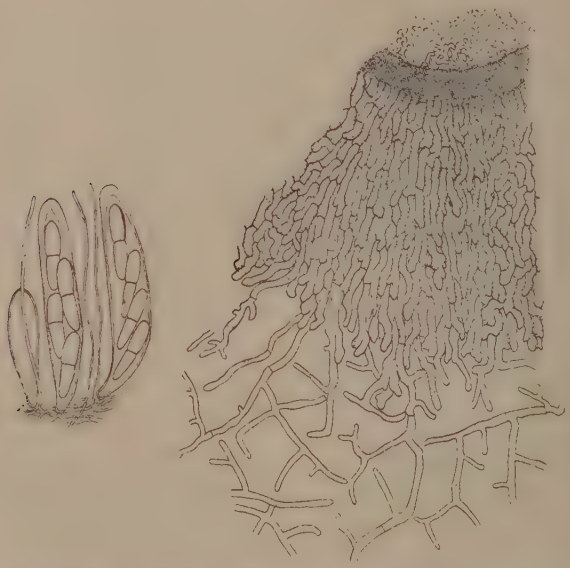

Fig. 10.—*Dictyothyrium Combreti*:—Sector of thyrothecium and mycelium: asci and paraphyses.

274. **Dictyothyrium Combreti** Hansford, sp. nov.

Plagulae hypophyllae effusae, aegre perspicues, griseae, leves, tenuissimae. *Mycelium* ex hyphis subhyalinis vel dilute olivaceis, 1–2 μ cr., indistincte septatis, dense irregulariter ramosis, exhyphopodiatis, superficialibus compositum *Thyriothecia* laxe dispersa, orbiculata, depresso-conica, atro-brunnea vel atra, usque ad 200 μ diam.; membrana basalis indistincta, hyalina; membrana superior brunnea, in centro opace atra, ex hyphis meandricis vel indistincte radiantibus, 2–3 μ cr., septatis composita, poro centrali rotundato 40 μ diam. pertusa. *Asci* centripetaliter directi, subcylindracei, subsessiles, sursum rotundati leniter

incrassati, 4-spori, circa 60×10–15 μ ; paraphyses numerosae filiformes hyalinae, 1 μ cr. *Sporae* oblique 1-seriatae, hyalinae, oblongae vel clavulatae utrinque rotundatae, 1-septatae, leniter constrictae, leves, 17–21×4–5 μ, cellula superiore lenissime crassiore.

Hab. in foliis *Combreti racemosi*, Entebbe Road, Uganda, *Hansford 3455*. (Fig. 10.)

Thyrothecia closely crowded, attached centrally to the subcuticular mycelium, up to 80 μ diam., when mature up to 40 μ high ; upper wall radiate, smooth, of dark brown rectangular cells 2–4 μ wide, up to 10 μ long ; lower layer (hypothecium) hyaline, indistinctly fibrillose-radiate, of 1–3 layers of small cells. Dehiscence at first stellate, then upper layer widely open and erect around edges of thyrothecium, enclosing asci embedded in mucus layer (derived from paraphysoids ?). Asci apparently aparaphysate, with indistinctly granular mucose layer around them and above ; wide clavate, attenuate-nodose-stipitate below, firm walled, 25–30×10–15 μ, 8-spored. Spores 2–3-seriate, brown, 1-septate, constricted or not, smooth, cells unequal, mature spores 10×4 μ.

The subcuticular mycelium is very difficult to find and apart from this the fungus could easily have been considered as superficial without evident mycelium.

275. **Eremotheca ugandensis** Hansford, sp. nov.

Scutella hypophylla, albida vel in centro dilute brunnescentia orbiculata levia dimidiata, 1–1·25 mm. diam., adnata, margine membranacea, astoma, glabra ; paries superior unistratosus ex hyphis hyalinis vel dilute fuligineis 3–4 μ cr., breviter et indistincte septatis, meandrice reticulatis, marginem versus indistincte radiantibus compositus ; membrana basalis hyalina plectenchymatica, hyphis 1–2 μ cr. *Asci* numerosi, singulariter dispersi, aparaphysati, ovati, circa 100×60 μ, sessiles, 8-spori, tunica 1 μ cr., gelatinosa. *Sporae* parallelae hyalinae cylindraceae utrinque rotundatae, rectae vel leniter curvulae, 1-septatae, haud constrictae, leves, usque ad 86×14 μ, episporio gelatinoso. Mycelium liberum non visum.

Hab. in foliis *Uvariae bukobensis*, Kazi, Kampala, Uganda, *Hansford 3070* ; in foliis *Landolphiae floridae*, Entebbe Road, Uganda, *Hansford 3161*, *3226*, *3447* ; in foliis *Garciniae Buchanani*, l.c., *Hansford 3271* ; in foliis *Phialodisci* spec., l.c., *Hansford 3268* ; in foliis *Canthii* spec., *3227* ; in foliis *Craterispermi laurini*, l.c., *3225* ; in foliis *Pseudospondiadis microcarpae*, *3218*, *3220* ; in foliis *Ventilaginis africanae*, l.c., *3423*.

The asci are single in scattered loculi separated by plectenchyma similar to that of the lower wall ; though 8 spores appear to be formed in all asci, frequently only 4 become mature.

276. **Eremothecella ugandensis** Hansford, sp. nov.

Scutella amphigena dispersa orbiculata brunnea 150–200 μ diam., levia, glabra ; paries superior unistratosus, ex hyphis dilute brunneis, 2–3 μ cr., septatis, reticulatis, haud radiantibus compositus, marginem versus hyalinus ; membrana basalis hyalina, plectenchymatica, ex hyphis indistinctis gelatinosis composita. *Loculi* dispersi, unicuique ascum unum continens, contextu plectenchymatico hyalino disjuncti.

Asci numerosi ovati aparaphysati 4–8-spori sessiles 50×35 μ. *Sporae* parallelae clavulato-ellipsoideae hyalinae 5–7 septatae, leniter con strictae 33×8–10 μ.

Hab. in foliis *Agelaeae ugandensis*, Entebbe Road, Uganda, *Hansford 2515*.

277. **Stomiopeltella Allophyli** Hansford, sp. nov.

Plagulae epiphyllae tenuissimae leves, orbiculares vel irregulares, usque ad 5 mm. diam., griseae vel atrae, glabrae. *Mycelium* ex hyphis reticulatis dilute olivaceis, 1–2 μ cr., exhyphopodiatis superficialibus, indistincte septatis, sinuosis compositum, tenuiter pelliculosum. *Scutella* dense dispersa, usque ad 120 μ diam., orbiculata, dimidiata, atrobrunnea, glabra, poro centrali pertusa; paries superior ex hyphis meandrice reticulatis 2·5–4 μ cr., septatis compositus, unistratosus; membrana basalis hyalina plectenchymatica, hyphis 1·2 μ cr., gelatinosis, indistincte septatis. *Asci* numerosi cylindracei, sursum rotundati, basi nodoso-stipitati, 8-spori, 30–37×8–12 μ; paraphyses numerosae hyalinae simplices filiformes, 1 μ cr. *Sporae* 2-seriatae hyalinae clavulatae utrinque obtusae, 1-septatae leniter constrictae leves, 9–12×3–4 μ, cellula superiore subglobosa, inferiore leniter angustiore elongata.

Hab. in foliis *Allophyli* spec., Kazi, Kampala, Uganda, *Hansford 3056*.

278. **Gloeopeziza ugandensis** Hansford, sp. nov.

Mycelium in plagulis *Halbaniellae* parasitans. *Hyphae* dense reticulatae hyalinae flexuosae 1·5–3 μ cr., remote septatae, irregulariter ramosae exhyphopodiatae. *Apothecia* subdense stipata discreta, primo globosa clausa, demum late aperta, rufo-brunnea vel fusca, extus albido-furfuracea, discoidea, 150–320 μ diam., 80–120 μ alt., deorsum in stipitem brevem subito attenuata vel subsessilia; excipulum 1– vel pluri-stratosum, ex hyphis plus minusve parallelis agglutinatis rufo-brunneis leniter sinuosis 3–6 μ cr., septatis (cellulis 10–20 μ long.) compositum, superne pallidius et in filis singulis erectis hyalinis 20–30×1–1·5 μ apice hamatis, simplicibus dissolutum. *Asci* numerosissimi clavato-ellipsoidei, sursum rotundati haud incrassati, deorsum attenuati, breviter stipitati, 8-spori, 35–45×6–10 μ. *Sporae* oblique 2-seriatae, cylindraceae utrinque rotundatae vel leniter fusoideae, subrectae vel curvulae, continuae hyalinae leves, 10–15×2–2·5 μ, saepe 2-guttulatae. *Paraphyses* haud numerosae, hyalinae filiformes, ascos superantes, simplices vel furcatae, apice curvatae vel hamatae.

Hab. in plagulis *Halbaniellae* in foliis *Paulliniae pinnatae*, Entebbe Road, Uganda, *Hansford 3135 p.p.*

The mycelial hyphae ramify over and between those of the host fungus and form a thin membrane over much of the colony. The apothecia are discoid, subsessile or contracted suddenly below into a very short rather thick stipe, and are at first reddish brown, becoming darker brown as they mature. On the outside of the mature apothecium is a white furfuraceous layer of the free ends of the hyphae of the excipulum, ending in hamate to coiled acute apices. Similar fine hyphae form the peridium of one to several layers surrounding the hymenium, and the

paraphyses are very similar, slightly exceeding the asci. Iodine colours the asci and paraphyses pale blue and the margin purple-brown.

279. Calloriopsis gelatinosa (Ell. & Mart.) Syd. in Ann. Myc., xv, p. 254, 1917.

On various Meliolineae Uganda, *Hansford 3022, 3082*, etc.

280. **Agyrium phragmiticola** Hansford, sp. nov.

Ascomata minuta, aegre perspicua, inter perithecia *Aphanostigmes Phragmitis* dispersa, alba, circa 60 μ diam. et 20 μ alt., irregulariter discoidea ; hypothecium tenuissimum ex hyphis hyalinis 1–2 μ cr., laxe intertextis compositum ; hymenium ex ascis erectis et hyphis paucis compositum ; excipulum nullum. *Asci* ovati vel clavati, sessiles, sursum rotundati haud incrassati, 8-spori, 15–20 × 7–9 μ, aparaphysati. *Sporae* multiseriatae, bacilliformes, hyalinae, continuae 6–8 × 1 μ.

Hab. socio *Aphanostigme Phragmitis* in foliis *Phragmitis mauritiani*, Entebbe Road, Uganda, *Hansford 3403*.

The ascomata are very minute, scarcely visible among the perithecia and mycelium of the *Aphanostigme*, and consist merely of a very thin hypothecium of loosely interwoven mycelial hyphae 1–2 μ wide, above which a naked group of erect asci is formed.

281. **Lecideopsella ugandensis** Hansford, sp. nov.

Plagulae hypophyllae superficiales orbiculares, usque ad 0·5 mm. diam., albidae vel in centro griseae, tenuissimae, leves, glabrae. *Hyphae* hyalinae, 2 μ cr., flexuosae, indistincte septatae, omnino superficiales, ramosissimae floccosae. *Asci* inter hyphis mycelii singulariter denseque absconditi, ovati subsessiles vel basi nodoso-stipitati, aparaphysati, circa 20 × 15 μ, 8-spori. *Sporae* parallelae clavulatae hyalinae 1-septatae, haud constrictae, 10–12 × 3 μ, utrinque obtusae.

Hab. in foliis *Artabotrydis nitidi*, Kazi, Kampala, Uganda, *Hansford 3054*.

The fungus is completely superficial and apparently is saprophytic in habit, forming very small white thin films on the leaf, loosely scattered, sometimes when mature becoming greyish brown in the centre, smooth, without setae. Each colony consists of a loose floccose tissue of fine hyaline hyphae, indistinctly septate and much branched in an irregular manner. Amongst these hyphae the asci are scattered, without paraphyses or peridium, and have no differentiated hypothecium.

282. Agyriopsis javanica von Hoehnel in Sitzb. K. Akad. Wiss. Wien, cxviii, p 1227, 1909.

On leaves of *Ventilago africana*, Uganda, *Hansford 2929, 3421* ; on *Alchornea cordifolia*, *Hansford 3119*.

283. **Brachysporium Harunganae** Hansford, sp. nov.

Plagulae tenuissimae griseae hypophyllae effusae. *Mycelium* superficiale, ex hyphis subhyalinis 2–3 μ cr., indistincte remote septatis, ramosis compositum, inter squamas folii repens. *Conidiophora* erecta, dispersa, simplicia, septata, atrobrunnea, subrecta 300–500 × 6–7 μ, sursum cicatricibus atris prominulis rotundis 3–4 μ diam. laxe praedita.

Conidia singula, acro-pleurogena, obclavata, olivacea, apice breviter attenuato-rotundata pallidiora, basi truncata, hilo plano atro, levia, 2 septata, haud constricta 30–45 × 8–11 μ.

Hab. in foliis *Harunganae madagascariensis*, Kawanda, Uganda, *Hansford 3347*.

Though the mycelial hyphae ramify closely among the cuticular scales, no penetration of the leaf was observed, and it appears to be saprophytic in habit.

284. **Stilbum Erythrinae** Hansford, sp. nov.

Mycelium in tomento folii absconditum, hypophyllum, ex hyphis hyalinis, indistincte septatis, ramosis, 2–4 μ cr. compositum. *Coremia* plerumque singulariter dispersa, erecta, subrecta, brunnea (sub microscopio dilute brunnea) 350–500 × 30 μ, simplicia, vertice capitulum singulum globosum dilute griseum ferentia, cauli ex hyphis parallelis septatis 2–3 μ cr. dense aggregatis composito *Conidia* acrogena singula hyalina continua ellipsoidea levia, 7–10 × 3·5–5 μ.

Hab. in foliis *Erythrinae tomentosae*, Entebbe Road, Uganda, *Hansford 3499 p.p.*

The fungus is associated with two distinct species of *Aphanostigme* (q.v. supra) and apparently parasitic on the leaf hairs of the *Erythrina*. The coremia are often limited to the raised veins, where they are loosely scattered.

Acknowledgements.—I have to thank the staff of the Pretoria Herbarium, and especially Dr. E. M. Doidge and Miss Bottomley, for their very great assistance and interest in placing at my disposal the facilities of that institution during my leave period, and for the permission to examine the numerous collections represented there. The staff of the Imperial Mycological Institute, Kew, have provided me with the same facilities and assistance, especially Mr. E. W. Mason. A number of workers, notably M. F. L. Hendrickx, Congo Belge, and Dr. Watts Padwick, New Delhi, have sent me collections of interesting species, of which several are described above as new.

Note on No. 246.—This species has been incorrectly named '*Asterinella loranthi* Hansf.' in Mycol. Pap. Imp. Mycol. Inst. 15, p. 185, 1946.

OBITUARIES.

Dr. John Henry Garrett died on 2 May 1946 at Cheltenham, aged 87 years. He was born on 25 October 1858 at Kineton in Warwickshire. He studied medicine at the University of Durham and at University College Hospital, London. In 1884 he gained the gold medal presented by the Pharmaceutical Society, and qualified M.B., B.S. in 1886; M.D. 1888, and D.P.H.Cambr. in 1889. He was elected a Fellow of the Linnean Society on 1 May 1890.

In 1892 he was appointed Medical Officer of Health for the borough of Cheltenham and held that post for 37 years until his retirement in 1929. Finding a knowledge of law useful in public health work, he studied

the subject and became barrister-at-law of the Middle Temple in 1902. The long period of his term of office at Cheltenham saw many changes in the practice of public health administration and a considerable increase in the duties of Medical Officer of Health. When he first took office many of the poorer parts of the town were still supplied with water from shallow wells, and he was active in obtaining a piped water supply for the whole town. This necessitated a considerable augmentation of the town's water supply and the selection of a new source. After collecting and examining samples of water from many parts of the River Severn and its tributaries he recommended the construction of a new intake and waterworks near Tewkesbury. These have recently been enlarged and now provide part of the water supply of the city of Gloucester as well as of Cheltenham.

Shortly after his appointment he was also responsible for supervising the reconstruction of the drainage system of a large part of the town. A year or two after his arrival a severe epidemic of smallpox broke out at Gloucester, eight miles away, and it was largely through his efforts that it was prevented from spreading to Cheltenham.

As well as contributing to improvements in the town's sanitary condition, he also did much to promote the use of its natural mineral waters and to popularize it as a health resort.

Always a great lover of the countryside and a keen observer of nature, especially of the English flora, he wrote two books describing the country in the neighbourhood of Cheltenham. The first of these, ' The Idyllic Avon ', describes the Warwickshire Avon from Tewkesbury to Stratford, and the second, ' From a Cotswold Height ', is concerned with the neighbourhood of Cleeve Hill, near Cheltenham. Of a more scientific nature, he was the author of a monograph, ' The action of water on lead ', which contained many of his own observations ; and, among other articles, ' *Crenothrix polyspora* var. *Cheltonensis* ', and ' *Chara foetida* and other water weeds and the effect of copper sulphate upon them ', in ' Public Health ', 1896 and 1916, and ' Mild Smallpox ' in ' The Lancet ', 1923.

J. N. Garrett.

Sir Cuthbert Cartwright Grundy, R.C.A., R.I., R.W.A., painter, author, and public benefactor, died at Blackpool on 2 February 1946. He would have been 100 years old had he lived until 10 July. He was elected a Fellow of the Linnean Society in 1872, and for many years had been the Father of the Society.

The youngest son of Thomas Grundy, he was a native of Bury, but settled in Blackpool 58 years ago. Educated at Stand Grammar School and at Owens College, Manchester, he was intended for the Bar, but illness interrupting his university career he interested himself in chemistry and took up painting. He painted figure and landscape subjects in oil and watercolour with a good deal of success, first becoming an exhibitor at the Royal Academy in 1888. As late as 1930 he was exhibiting at the Walker Art Gallery, Liverpool.

Grundy, who took a particularly close interest in Welsh art, was one of the founders of the Royal Cambrian Academy, of which he was president for 21 years. His services were also at the disposal of the

Royal West of England Academy (vice-president), the Royal British Colonial Society of Artists, the South Wales Art Society, and the Fylde Art Society; and he initiated the Lake District Artists Society. Honorary membership was conferred upon him of the Royal Art Society of New South Wales, the West Australian Society of Arts, the New Zealand Academy of Fine Arts, and the Royal Society of Miniature Painters.

In his younger days Grundy was an athlete and a golfer of repute, and for saving two boys from drowning at Morecambe he was awarded the Royal Humane Society's silver medal. He devoted much time to charitable work, his public benefactions being large and numerous. His gifts included Bury Children's Holiday Home, Bury Schools' Holiday Camp, Manchester Special School for Phthisic Children, Blackpool Children's Convalescent Camp, Unsworth Children's Playing Field, Blackpool Unitarian Church Hall, and land at Ambleside to the National Trust. With his brother, J. R. G. Grundy, he was a joint donor to Blackpool of the Grundy Art Gallery where periodical exhibitions are held and which has a growing permanent collection. Blackpool made him an honorary freeman of the borough in 1938. With his brother he also gave Blackpool a public recreation ground and reading-room, a public institute, and pleasure grounds and children's recreation grounds; and Cheshunt, Hertfordshire, a recreation ground and Grundy Park. Sir Cuthbert Grundy, who was created a knight in 1919, was the author of 'An Introduction to Chemistry', 'Notes on the Food of Plants', 'How does a plant grow?' and pamphlets on the fine arts. His recreation was music.

[To the above notice Sir Alfred T. Davies, K.B.E., C.B., D.L., now in his eighty-sixth year, has kindly added the following]:—

His 'humanism' was Cuthbert Grundy's outstanding quality. He was a striking example of a type of citizen in which Lancashire, his native county, has ever been rich—men who never allowed their main occupation, or pre-occupation, in life to absorb the whole, or even the greater part, of their energies, but who regarded themselves as owing a debt to their fellow-men their discharge of which was not to be circumscribed by the bounds of their environment or the necessities of their own existence. Among such, in an earlier period, must be reckoned also William Roscoe (1753–1831), the Liverpool banker, litterateur and author, an early Fellow of the Society and a friend of its first President, Sir James Edward Smith; his son, Thomas Roscoe (1791–1871), and Leopold Hartley Grindon (1818–1904).

Grundy's eminent and diversified public services and benefactions—which can only be epitomized in an obituary notice such as this—reveal something of his vision, as well as the scope of his activities and the large-heartedness of his character. They also eloquently attest his worth as a citizen. Of the man himself I have the happiest and most grateful memories, if only because of the great work he did for Wales in connection with the Royal Cambrian Academy and Plâs Mawr, Conway. Although, to the best of my recollection, I met him but once, that fact only tends to throw into stronger relief one example of his 'humanism'.

When I was Permanent Secretary to the Welsh Department of the Board of Education I ventured one day to suggest to him that there was need for a greater diffusion of fine examples of elevating pictures among the schools of Wales. That, I added, might be brought about by the formation of a circulating collection for schools of reproductions of the best Richard Wilsons, David Coxes and R. W. Leaders—to name but a few of the artists who have painted Wales. Grundy seized upon the idea with avidity, co-operated heartily with me in giving effect to it and ended up with bearing the whole bill of its cost which, as can be imagined, run well into three figures. That incident was typical of a man whose sympathies were too broad and large-hearted for his charities to be compressed within narrow limits. Those outstanding qualities of his once found eloquent, if simple, expression in a single act: he is credited with being the originator of *The Wayside Pulpit*, a fact which alone entitles him to be remembered with gratitude by a posterity which is but too prone to forget its benefactors. ALFRED T. DAVIES.

ALEC W. HAGGIS died in London on 4 April 1946. He was born on 20 September 1889 at Ipswich, and received his education at the Endowed School for Boys, Ipswich. In 1912 he joined the staff of Messrs. B. T. Batsford, Ltd., the London publishers, and while there he rose rapidly in the esteem of the firm. He was responsible for handling a number of important publications, of which Sir Bannister Fletcher's 'History of Architecture on the Comparative Method' was an outstanding example. In December 1930 he was appointed to the scientific staff of the Wellcome Historical Medical Museum in London.

It was in connection with the work of the Wellcome Historical Museum that Haggis will be chiefly remembered. He soon acquired a good knowledge of the contents of this vast collection, and he was associated in various ways with some of its publications. At a later date he was appointed Assistant Conservator, and he was made responsible for the setting up of the medieval gallery. He was still engaged on this work at the time of his sudden death.

Mr. Haggis was a man of many sterling qualities. He was essentially a student by nature, and during a period of two years he had leave of absence from the Wellcome Historical Museum to study at Oxford University, where he was engaged on research intended for submission for the degree of D.Phil. The submission would have been made this year had it not been for his death. He also contributed to a scientific journal an important study dealing with the early history of quinine. His experience in the publishing world had given him a wide interest in general culture to which he added during his years with the Wellcome Museum. His main interests were, however, mediaeval and he was a treasury of information on many aspects of that period. He was elected a Fellow of the Linnean Society in 1932.

Haggis served in the Royal Engineers for three years during the war of 1914–19. He is greatly missed by his scientific colleagues, and his death cuts short much important work on which he had been engaged.

E. ASHWORTH UNDERWOOD.

Peter Chalmers Mitchell was born at Dunfermline on 23 November, 1864, and died in University Hospital, London, on 2 July, 1945, as the result of being knocked down by a taxi-cab outside the north entrance to the Zoological Society's Gardens at Regent's Park. He was the eldest son of the Rev. Alexander Mitchell, and a descendant of Dr Thomas Chalmers, the founder of the Free Church of Scotland. He received his early education at the Aberdeen Grammar School, passing thence to the University of Aberdeen, and later to Christ Church, Oxford, where he was an Exhibitioner. After further studies at Berlin and Leipzig, he became Senior University Demonstrator in Comparative Anatomy and Assistant to the Linacre Professor at Oxford in 1888, and from 1891 to 1893 acted as organising secretary for Technical Instruction to the Oxfordshire County Council. From 1892 to 1894 he was Lecturer in Biology at Charing Cross Hospital; and was Examiner in Biology to the Royal College of Physicians from 1892 to 1896, and again from 1901 to 1903; and Examiner in Zoology to University College, London, in 1903. He became Secretary to the Zoological Society of London in 1903, a post which he held until his retirement in 1935. He served on Departmental Committees on Fishery Investigations and on Sleeping Sickness, as well as on others connected with the 1914–1918 war with Germany, receiving the C.B.E., and later in 1929, a Knighthood in recognition of his services.

Of his published works on comparative anatomy the following papers may be specially mentioned: 'On so-called "quintocubitalism" in the wing of birds; with special reference to the Columbae, and notes on anatomy,' published in the Linnean Society's Journal (Zoology), xxvii, 1899–1900; 'On the Intestinal Tract of Mammals,' published in the Transactions of the Zoological Society of London, xvii, 1905; 'On the Anatomy of Gruiform Birds; with special reference to the correlation of modifications,' in the Scientific Proceedings of the Zoological Society, 1901; 'On Longevity and Relative Viability in Mammals and Birds, with a note on the Theory of Longevity,' published in the same Society's Scientific Proceedings, 1911. Among his published books may be mentioned 'Outlines of Biology' (1894); 'Thomas Henry Huxley: a sketch of his life and work' (1900); 'The Childhood of Animals' (1912); 'Evolution and the War' (1915); 'Centenary History of the Zoological Society of London' (1929); 'Materialism and Vitalism in Biology' (1930); and 'My Fill of Days: Reminiscences' (1937). He was also responsible for various translations from German and Spanish authors.

Chalmers Mitchell will always be remembered for his work at Regent's Park, to which he gave of his best throughout his long term of office. At the time of his appointment to the Secretaryship in 1903, the financial condition of the Society was in an unsound condition and, to put it mildly, there existed a considerable amount of friction between a section of the Fellows and the Council over the management of the Society's Gardens at Regent's Park, and other matters concerning the Society's well-being; altogether a position calling for considerable tact, foresight, and discretion. Mitchell entered upon his new duties with characteristic zest; he was a born fighter, and withal persuasive and trenchant in

argument, while from his Scottish ancestry he had inherited a clear-sighted shrewdness and tenacity of purpose which, applied to the troubled situation, soon brought about success. Throughout his tenure of the Secretaryship, Mitchell strove to uphold the principles laid down in the Society's Charter, namely, the advancement of Zoology and Animal Physiology by the publication of the results of original research in the 'Transactions' and 'Proceedings,' and the popular education of the public by the maintenance of the collections of living animals at Regent's Park. That his labours were crowned by success becomes obvious from the large number of monographs by leading zoologists included in the Society's scientific publications, and, that at the time of his retirement, the Society's annual income had risen to £150,000 with substantial reserves; Whipsnade had been acquired and partially developed, while the number of yearly visitors to the Gardens exceeded 2,000,000.

As the years passed he became more and more absorbed in his work for the Society both at Regent's Park and in the development of the newly established menagerie at Whipsnade, and although continuing to serve on various Departmental Committees, and attending the meetings of other scientific institutions, he would never allow these engagements to encroach upon his administrative duties, returning to his office at Regent's Park and working far into the night to clear up any matters requiring immediate attention.

Much of Mitchell's success in life was due to his versatility and widely varied interests, together with his scientific training and shrewd business ability. Though not what is popularly termed 'a good mixer,' Mitchell when in responsive mood, could be a most delightful and entertaining companion; moreover, when at the dinner-table conversation showed signs of flagging or becoming dull, he was always ready with some story, or controversal remark, with which to set his neighbours at ease and talking; and to this end he would, on occasion, champion the most forlorn of causes or some particularly startling theory, a habit that at times, and quite undeservedly, brought upon him a charge of insincerity from people less adept in the gentle art of leg pulling. He was much interested in the development of aviation, and the failure of one of the early attempts, in which he took part as a passenger, at a flight from Cairo to the Cape, was a great disappointment. Motoring and sketching in pastel were two of his favourite hobbies in later years, as affording a complete change from the daily round of his official responsibilities, and enabling him for a while to be to himself in the quiet countryside, which he dearly loved. He had looked forward keenly to spending the last years of his life at his villa in Malaga—'my little castle in Spain'—and it was a bitter disappointment when, owing to the outbreak of civil war and the capture of Malaga by the Falangists, who arrested and threatened to shoot him, he had to leave the country and, from the deck of a British destroyer that had come to his rescue, say good-bye to his long cherished dream.

By those who had the good fortune to know him intimately, Chalmers Mitchell will ever be remembered as a staunch and faithful friend, and a remarkable and many sided personality. F. MARTIN DUNCAN.

THOMAS HUNT MORGAN (1868–1945). When some twenty-five years and more ago I sat at the feet of Thomas Hunt Morgan he seemed to me to be a big man. He was, and with the passing of the years his stature increased. He was an attractive creature, rebellious against authority in science, unimpressed by orthodoxy, by nature an experimentalist at a time when experimentation was not popular in biology, a mechanist, though not a rabid one, when to hold such views was socially unprofitable, a congenital sceptic in the days when exciting speculation was rife. He was a kindly, humble man difficult to distinguish from the least mature of his disciples, for none of his opinions was a conviction and he was ever ready to jettison any one of them if in argument he was offered a better.

But, in my view, Morgan's greatness rested on the following attributes. He was unerring in his selection of a problem worthy of investigation, he could equally unerringly select the most appropriate experimental material for employment in the solution of that problem and he could see with the greatest clarity the meaning of the results that he obtained. Moreover, and especially, he could attract to himself and hold a group of younger people as well equipped intellectually and technically as he was himself, in some instances even better equipped. It is doubtful that any man multiplied himself so thoroughly and so well as did Morgan in the earliest days of the Columbia genetical school. In those days Morgan was not a man, he was, in fact, a school, one of a small group of brilliant active people.

Before this he was an experimental morphologist at work on problems of development and regeneration. Then he became entangled in the problems of the origin of species and, being himself, sought to attack them experimentally. At this time Castle, Monkhouse, Lutz and Payne (the last in the Columbia laboratory itself) had shown that *Drosophila* was a most useful laboratory animal. Morgan, being Morgan, seized on it and observed mutant character after mutant character during the years 1909–1912. These, he found, did not establish new species (de Vries' Mutation Theory) nor did they show a qualitative relation to the conditions under which they occurred or a tendency to be repeated more often in a given direction after having once occurred (Darwin). So Morgan, being Morgan, began to explore the mode of inheritance of the mutant characters he had observed.

Soon sex-linkage was observed and tentatively explained and Miss Stevens made her contribution to the cytology of *Drosophila*. Here is an instance of Morgan's luck—or was it luck? If the results of experimental breeding had to be related to chromosomes and their transmission the experimental material had to have few and heteromorphic chromosomes. No animal could have displayed a more helpful set.

Then Morgan went on to make his greatest contribution to biological science, the establishment of the genetical case for crossing over, which, together with Jannsen's chiasmatype theory, was to be the spur to an intense development of genetical science all over the world to the great advantage of biological science generally. It was Morgan who put genetics on the map and who made the mapping of the chromosomes inevitable. His name will live, though from one point of view it was an

unsuitable one—attempts were made by others to use the name Morgan to designate the unit of distance in the length of the chromosome, but it never became popular and is not now used.

There came a time when Morgan became satiated with genetics; his young men had all grown up to academic maturity and had left and the absurdly inadequate rooms in Columbia University in which he and his disciples had worked and argued and lived violently became a lonely place. He went to the California Institute of Technology at Pasadena to indulge once more in the interests of his earliest professorial days.

The record inscribed upon the books of learned societies, e.g., Foreign Member, Linnean Society of London, 1917; Foreign Member, Royal Society, London, 1919; Croonian lecturer, 1922; Darwin Medal, 1924; Copley Medal, 1939; and, above all, Nobel Laureate in Medicine, 1933, are not more deeply engraved than are the memories that his disciples cherish.

F. A. E. Crew.

BENEFACTIONS.

List *in accordance with Bye-Laws, Chap.* 17, *Sect.* 1, *of all Donations of the amount or value of Twenty pounds and upwards, received during the past five years.*

1940

The late Major J. R. G. Gwatkin: An extensive collection of paintings of flowering plants, mainly British.

The Royal Society: Grant-in-aid of publications, £100.

The Percy Sladen Memorial Fund: Cost of printing and illustrating 'Transactions', 3rd ser., vol. i, part 2.

1941

The late Mr. Francis Druce: (1) £200 for general purposes of the Society; (2) a selection of books from his library, including some rare early botanical works.

Rockefeller Foundation: Donation in aid of publications, £100.

Carnegie Corporation of New York, $8,060, for the preparation of a photographic record of the collection and manuscripts of Carl Linnaeus.

The late Sir Arthur Evans: Portrait in oils of John Dionysius Ehret F.R.S., by George James, A.R.A., 1767.

1942

Rockefeller Foundation: Donation in aid of publications, £200.

The Royal Society: Grant-in-aid of publications, £100.

India Office: Complete set of the Linnean Society of London's publications.

1943

Rockefeller Foundation: Donation in aid of publications, £100.

The Royal Society: Grant-in-aid of publications, £100.

1944

Rockefeller Foundation: Donation in aid of publications, £150.

The Royal Society: Grant-in-aid of publications, £50.

Mr. J. Insch: Donation to be used for the repair and binding of his collection of books on Tea, to be bequeathed to the Society, £100.

Gonville and Caius College: Donation in aid of the publication of Dr. V. J. Chapman's paper on the Vegetation of Jamaica, £50.

Lt.-Col. F. R. S Balfour, C V.O., J.P., D.L.: Transcription of the Journal of Archibald Menzies (1754–1842), bound in half leather; 5 vols quarto.

1945

The late Mr. H. N. Dixon: Legacy for general purposes, £100.

The Royal Society: Grant-in-aid of publications, £650.

Rockefeller Foundation: Donation in aid of publications, £200.

ADDITIONS AND DONATIONS

TO THE

LIBRARY

1944–45

Note.—Names of donors are given in square brackets. Separate copies of papers which are included in periodicals received by the Library are no longer catalogued.

Ainsworth, G. C., & Bisby, G. R. A Dictionary of the Fungi. Pp. viii+360. 8vo. *Kew*, 1943.

Allee, W. C. The Social Life of Animals. Pp. xiv+265. 8vo. *London*, [n.d.].

Ansted, D. T. In search of minerals. Pp. 282. 8vo. *London*, 1880.
[Bradford N. H., & Micros. Soc.]

Armattoe, R. E. G. The Swiss contribution to Western Civilisation. Pp. 91. 8vo. *Dundalk*, 1944. [Author.]

Ash, E. C. Pond Life. Pp. 94. 8vo. *London*, [n.d.].
[Bradford N. H., & Micros. Soc.]

Bentley, R. A Manual of Botany. Ed. 2 & 4. 8vo. *London*, 1870–82
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Bisby, G. R. *See* **Ainsworth, G. C.**

Bower, F. O. A course of practical instructions in Botany. Pp. xii+547. 8vo. *London*, 1891. [Bradford N. H., & Micros. Soc.]

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Catalogue of the vascular plants of S. Tomé (with Principe and Annobon. By A. W. Exell. Pp. xi+428. 8vo. *London*, 1944.
[Trustees, Brit. Mus. (Nat. Hist.).]

British Mycological Society.
List of Common British Plant Diseases. Pp. 61. 8vo. *Cambridge*, 1944.

Cole, F. J. A history of Comparative Anatomy. Pp. viii+524. 8vo. *London*, 1944.

Curnock, N. Nature-musings; on Holy-days and Holidays. Pp. xvi+232. 8vo. *London*, 1886. [Bradford N. H., & Micros. Soc.]

Dale, C. W. The History of our British Butterflies. Pp. xxx+228. 8vo. *London*, [n.d.]. [Bradford N. H., & Micros. Soc.]

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[Bradford N. H., & Micros. Soc.]

Edmonds, H. Elementary Botany. Pp. 213. 8vo. *London*, 1891.
[Bradford N. H., & Micros. Soc.]

Etheridge, R. *See* **Nicholson, H. A.**

Exell, A. W. *See* **British Museum (Natural History).**

Fritsch, F. E. The Structure and Reproduction of the Algae. Vol. 2. Pp. xiv+939. 8vo. *Cambridge*, 1945. [Author.]

Gilmour, John. British Botanists. Pp. 48. 8vo. *London*, 1944.
[Publishers.]

Grant, R. E. Outlines of comparative anatomy. Pp. 656. 8vo. *London*, 1841.
[Bradford N. H., & Micros. Soc.]

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Johnson, C. W. An essay on the uses of Salt for Agricultural purposes and in Horticulture... Pp. xvi+147. 8vo. *London*, 1821. [Bradford N. H., & Micros. Soc.]

Jones, F. Wood. Structure and function as seen in the Foot. Pp. iv+329. 8vo. *London*, 1944.

Kane, W. F. de V. European Butterflies. Pp. xxxii+184. 8vo. *London*, 1885. [Bradford N. H., & Micros. Soc.]

Lack, David. The Life of the Robin. Pp. 200. 8vo. *London*, 1944.

Lindley, John. An introduction to Botany. Ed. 4. 2 vols. Pp. x+406; vii+427. 8vo. *London*, 1848. [Bradford N. H., & Micros. Soc.]

Lubbock, *Sir* John. Scientific Lectures. Pp. x+187. 8vo. *London*, 1879. [Bradford N. H., & Micros. Soc.]

Lyell, *Sir* Charles. The student's elements of Geology. Pp. xx+672. 8vo. *London*, 1878. [Bradford N. H., & Micros. Soc.]

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Nicholson, H. A., & Etheridge, R. Silurian Fossils of the Girvan District in Ayrshire. Fasc. 1 & 2. 8vo. *London*, 1878–80.

Norman, J. R. Squire. Memoirs of Charles Davies Sherborn. Pp. 202. 8vo. *London*, 1944.

Olivier, Georges. Monographie des Pies-Grieches du genre *Lanius*. Pp. 326. 8vo. *Rouen*, 1944.

Radcliffe, William. Fishing from the Earliest Times. Pp. xxi+494. 8vo. *London*, 1926. [Lt.-Col. W. P. C. Tenison.]

Ramsbottom, John. Edible Fungi. Pp. 35+16 pls. 8vo. *London*, 1943. [Author.]

Rayner, M. C., & Neilson-Jones, W. Problems in Tree Nutrition. Pp. 184. 8vo. *London*, 1944.

Schopfer, W. H. Plants and Vitamins. Pp. xiv+300. 8vo. *Waltham, Mass.*, 1943.

Schrödinger, Erwin. What is Life? The Physical Aspect of the Living Cell. Pp. viii+91. 8vo. *Cambridge*, 1944. [Col. F. C. Stern.]

Scherren, Henry. Ponds and Rock Pools. Pp. 208. 8vo. *London*, 1919. [Bradford N. H., & Micros. Soc.]

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Stephens, J. F. Illustrations of British Entomology... Vols. 1–4, 6. 8vo. *London*, 1828–35. [Bradford N.H., & Micros. Soc.]

Trease, G. E. A Text-book of Pharmacognosy. Pp. viii+799. 8vo. *London*, 1945. [Author.]

Taylor, J. E. Our common British Fossils. Pp. xii+331. 8vo. *London*, 1885. [Bradford N. H., & Micros. Soc.]

ASSOCIATION FOR THE STUDY OF SYSTEMATICS IN RELATION TO GENERAL BIOLOGY

'Annual' Report, V. (1942–46)

The Fourth Annual Report (1941–42) was adopted at the Annual General Meeting held on 2 June 1942, and was published in the *Proceedings of the Linnean Society*, 1943–44, Part 3, 21 August 1945. At this Annual General Meeting a resolution was passed suspending the activities of the Association during the war, and instructing the Council to take steps to resume these activities within a year of the termination of general hostilities, or earlier if they saw fit. The whole text of the Resolution is printed as an Addendum to Annual Report No. 4.

In accordance with this instruction, a Council Meeting was called on 21 March 1945, and two subsequent Council Meetings have since been held (13 February and 3 April 1946). At these meetings it was agreed that the work of the Committees of the Association, with the exception of the Handbooks and Publications Committees, should continue in abeyance till after the next Annual General Meeting, unless circumstances warranted resumption to deal with any particular problem.

A joint meeting of the Handbooks and Publications Committees was held on 9 January 1946, to consider (i.) the policy of the Association regarding the publication of handbooks and handlists of the British Fauna and Flora, and (ii.) the possibility of founding a new journal for publications having a direct bearing on evolutionary problems.

(i.) It was agreed that, since many other bodies were concerned with the publication of similar handbooks and handlists, possible overlapping might be avoided, and co-operation in covering the field completely and uniformly might be facilitated, if a discussion were arranged between all those interested. Accordingly a letter has been addressed to a number of Societies and Associations proposing a Conference to be held in London during the last week of May 1946.

(ii.) Information had been received from the United States that American biologists were of the opinion that the founding of such a journal was desirable. Preliminary information indicated that it was not likely that this could be done in U.S.A., but that subscribers and contributions would be forthcoming. Enquiries in this country showed that the publication of such a journal as the official organ of the Association was feasible if American support materialized on the scale forecast. Subsequent developments in America, however, resulted in the formation of a new body entitled The Society for the Study of Evolution, which intends to publish its own journal. At the moment informal negotiations are proceeding in an endeavour to secure an international editorial committee for this Journal, on which the Association should be represented, and also for the supply of the

journal to our members at a reduced rate. In any event, the Council is considering publishing occasional volumes of essays and reviews dealing with current work in the fields covered by the Association.

The Council has accepted the offer of the Linnean Society for an extension of the existing agreement between the two bodies for a period of one year from 10 January 1946.

Treasurer's Report.

The accounts were taken at 30 March for the period 27 May 1942 to 30 March 1946.

At 30 March 1946, there were no outstanding debts; credit balance at the Westminster Bank amounted to £82 5*s.* 1*d.*; credit balance at Post Office Savings Bank, £183 19*s.* 1*d.* The money in the bank is distributed amongst the Association's funds as follows:—Ordinary Funds, £130 5*s.* 1*d.*; Special Fund, £116 15*s.* 0*d.*; interest on P.O. Savings account, £17 4*s.* 1*d.*

Assets of the Association are the continued interest in the royalties from future sales of *The New Systematics* (of which over 1500 have been sold), and receipts from future sales of *Key Works*, the remaining stock of which is approximately 180. It is pertinent to note that sales of *Key Works* have gone up during the last year; the edition consisted of 500.

The Association has 16 Founder Members and 100 Ordinary Members. In addition there is a considerable number of biologists who have taken part in the activities of the Association but who are in arrears with their subscriptions, no attempt having been made to collect outstanding dues during the war years. Since the last Annual General Meeting in 1942, 4 new Founder Members and 17 new Ordinary Members have joined the Association; three members have died, and one has resigned.

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